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Geology and Mineral Deposits of the Parry Sound – Huntsville Area

By
D. F. HEWITT

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Map 2118 (coloured)—Parry Sound–Huntsville area, Districts of Parry Sound and Muskoka. Scale, 1 inch to 2 miles.

ABSTRACT

This report and the accompanying map are the results of a compilation of the geology and mineral deposits of the Parry Sound-Huntsville area. The map sheet covers an area of about 2,000 square miles lying between Lat. 45° and 45°30′N, and extending west from Long. 79°W into Georgian Bay. It includes parts of the Districts of Parry Sound and Muskoka.

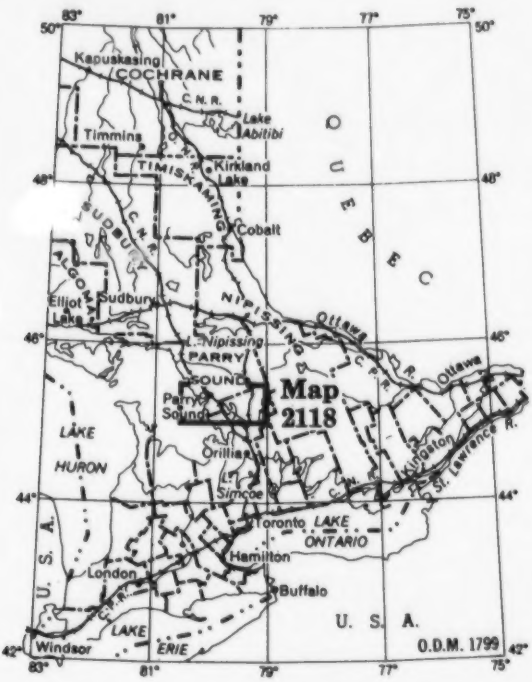

Figure 1—Key map showing location of map-area.

The mining industry of the area is confined to building stone, road stone, clay products, and sand and gravel. Other economic minerals present include diatomite, silt, feldspar, mica, garnet, copper, zinc, iron, gold, molybdenum, and uranium.

With the exception of the North and South Limestone islands in Georgian Bay, the bedrock formations are entirely of Precambrian age. Veined, banded, and homogeneous pink and grey migmatitic gneisses predominate. There are minor amounts of paragneiss, amphibolite, quartzite, and marble. Basic intrusive rocks include anorthosite, diorite, quartz diorite, gabbro, and peridotite.

Geology and Mineral Deposits

of the

Parry Sound – Huntsville Area

By

D. F. Hewitt[1]

INTRODUCTION

This report and the accompanying Map 2118 (back pocket) are the results of a compilation of the geology and mineral deposits of the Parry Sound–Huntsville area. The map-sheet covers an area of about 2,000 square miles lying between Lat. 45° and 45°30′N, and extending west from Long. 79°W into Georgian Bay. It includes parts of the Districts of Parry Sound and Muskoka. The Parry Sound–Huntsville map is the third in a series of geological compilation sheets of southern Ontario on a scale of 1 inch to 2 miles. The area is covered by the following National Topographic map sheets (at a scale of 1 to 50,000): Sans Souci, Parry Sound, Lake Joseph, Seguin Falls, Bracebridge, and Huntsville. The principal towns in the area are Parry Sound, Bracebridge, and Huntsville.

Much of the information for this compilation was drawn from published and unpublished maps and reports; a geological reconnaissance of parts of the area was carried out by the author in August 1963.

Prospecting and Mining Activity

The mining industry of the area is confined at present to industrial minerals, building stone, road stone, clay products, and sand and gravel. Building stone is produced at 5 quarries near Parry Sound and Huntsville; road stone is quarried near Port Cunnington and Brackenrig Bay from deeply weathered peridotites. Using local clays, a brick plant operates at Huntsville, and a tile plant operates at Bracebridge. Sand and gravel is produced near Huntsville, Bracebridge, Milford Bay, Novar, Raymond, and Utterson.

[1]Senior Geologist, Ontario Department of Mines, Toronto. Manuscript received by Chief Geologist 5 January 1965.

Other minerals present in the area include diatomite, silt, feldspar, mica, garnet, copper, zinc, iron, gold, molybdenum, and uranium. The discovery of copper near Parry Sound in 1893 sparked a period of intensive prospecting, especially in Foley and Cowper townships, and many copper prospects were uncovered between 1893 and 1900. Some production of copper ore was reported during this period from the Wilcox and McGown mines. In the 1920s there was production of feldspar from pegmatite dikes in Conger township. In the early 1920s a garnet property at Depot Harbour on Parry Island was developed. A small tonnage of diatomite was produced from lakes in the Huntsville area in the 1920s and 1930s. During the 1940s and 1950s silt was produced by International Ceramic Mining at Melissa near Huntsville. In the early 1950s considerable prospecting for uranium in the area turned up several minor occurrences of radioactive minerals, mainly in pegmatite dikes.

Previous Geological Work

A traverse of the shore of Georgian Bay was made by Alexander Murray in 1848, and he gives a brief account of the geology of the shoreline (Murray 1848, p. 45, 46). The shoreline of Georgian Bay was again examined by Robert Bell in 1876 (Bell 1876, p. 198-207). The Huntsville–Bracebridge area was investigated by W. A. Parks (1900, p. 121-126), and brief notes on the geology are given. Further field work was done in the area in 1905 by T. L. Walker (1905, p. 84-86). The International Geological Congress had a field excursion in Parry Sound area in 1913. Some local geological features are described by T. L. Walker (1913, p. 98-100).

A description of the mines and geology of the Parry Sound area is given by A. P. Coleman (1894, p. 98-100) and (1899, p. 259, 260). A most complete and useful report on the geology and mineral occurrences of Parry Sound district is given by Satterly (1942), and much of the economic geology section of this report is taken from Satterly's report.

Some field work was done on the Parry Island anorthosite by T. N. Irvine, who also kindly loaned the author a set of aerial photographs of Parry Island.

Aeromagnetic sheets on a scale of 1 inch to 1 mile are available for the Huntsville, Bracebridge, Lake Joseph, and Seguin Falls topographic sheets.

Physiography

The report-area is part of the Precambrian Laurentian peneplane. The peneplane surface slopes gently upward from an elevation of 580 feet above sea-level at Georgian Bay, to about 1,300 feet in the vicinity of Huntsville. The highest point in the area is northeast of Huntsville and has an elevation of 1,500 feet above sea-level. Relief is lowest in the southern and western parts of the area and reaches about 300 feet in the Huntsville area where there are several 300-foot hills capped by relatively flat-lying paragneisses. Although the general surface of the country is a peneplane, the topography is quite irregular in detail and the area is dotted with many small lakes separated by rocky ridges. Soil cover is generally sparse. The area is well wooded.

It is underlain by granitic and metamorphic gneisses, and in many places the structural alignment of the gneisses strongly influences the topography. For

example, the rivers and lakes underlain by the gneisses of the Moon River syncline in Conger and Freeman townships follow the foliation trends of the gneisses.

Along the Georgian Bay coastline the Laurentian peneplane is submerged, and the tops of hills project as innumerable rocky islands usually linearly oriented in the direction of foliation of the bedrock gneisses. Deep inlets such as Tadenac Bay and Twelve Mile Bay follow foliation trends in the gneisses. Other inlets such as Fitzgerald Bay, Snug Harbour, and the Little Shebeshekong River follow joint patterns cutting across the gneissic foliation.

Fitzgerald Bay and the Little Shebeshekong River are unnamed on Map 2118. Fitzgerald Bay is at Lat. 45°22′N, Long. 80°18′W, the Little Shebeshekong River is at Lat. 45°25′N, Long. 80°19′W.

The principal lakes are Lake Muskoka, Lake Joseph, Rosseau Lake, Skeleton Lake, Lake Vernon, Mary Lake, Fairy Lake, Peninsula Lake, and Lake of Bays, all of which are drained by the Muskoka River system into Georgian Bay. Manitouwabing and Mill lakes near the town of Parry Sound drain through the Seguin River into Parry Sound.

GENERAL GEOLOGY

The bedrock formations of the Parry Sound–Huntsville area are almost entirely of Precambrian age. Two small groups of islands in Georgian Bay about 24 miles west of Parry Sound, the North Limestone and South Limestone islands, are composed of Ordovician limestone of probable Black River age. These are the only outcrops of Paleozoic rocks in the area. The principal Precambrian rocks are granitic and migmatitic gneisses, amphibolite, paragneiss, and basic intrusive rocks. Marble is rare, but present in a few localities.

The bedrock is largely composed of veined, banded, and homogeneous pink and grey migmatitic gneisses produced by injection and granitization of metamorphic gneisses of various types. The rocks are mainly of the upper amphibolite and granulite metamorphic facies. Hypersthene-bearing charnockitic gneisses are present in the area. The origin of much of the amphibolite gneiss is obscure. Some of the amphibolite, which is interbedded with quartzite and marble, is undoubtedly of sedimentary origin being derived by metamorphism from limy argillaceous sediments. Some of the amphibolite gneiss is apparently produced by the metamorphism of diorite and gabbro. Paragneiss, which is mainly represented by biotite-quartz-plagioclase gneiss, is common in the Huntsville and Lake of Bays area. Much of the migmatitic gneiss has been developed by the granitization of paragneiss.

A group of basic intrusions are present in the area. At the west end of Parry Island there is a large body of anorthosite. Anorthosite is also exposed along the north shore of Five Mile Bay and was reported by T. L. Walker (1905, p. 86) on the shores of Twelve Mile Bay in Freeman township.

Parry Sound–Huntsville area

Hypersthene quartz diorites are found at Manitouwabing and Leonard lakes. There are also two small bodies of serpentinized peridotite. One is at Brackenrig Bay in Watt township, the other at Port Cunnington in Franklin township. There are several smaller basic intrusions scattered throughout the area.

The youngest igneous rocks are dikes of granite pegmatite, which cut many of the preceding rock types.

The area was glaciated during Pleistocene times, and glacial moraines, till sheets, and sand and gravel are present in the area. Several sand and gravel deposits are worked for fine and coarse aggregate, road stone, and fill.

TABLE OF FORMATIONS

CENOZOIC PLEISTOCENE AND RECENT	Sand, gravel, clay, till, peat, diatomite.
Unconformity	
PALEOZOIC ORDOVICIAN	Black River Limestone.
Unconformity	
PRECAMBRIAN PLUTONIC ROCKS	Granite gneiss, granite pegmatite, migmatite. Diorite, gabbro, anorthosite, peridotite.
Intrusive Contact	
DOMINANTLY METASEDIMENTARY ROCKS	Paragneiss, amphibolite, quartzite, marble.

Metasedimentary Rocks

PARAGNEISS

Paragneiss or psammo-pelitic gneiss is a common rock type in the northeastern part of the map-area, northeast of Huntsville. These rocks consist essentially of biotite, quartz, and plagioclase, with or without hornblende and garnet as characteristic accessories; variable amounts of microcline and microcline perthite depending on the degree of granitization, and minor accessory opaque minerals, titanite, apatite, epidote, zoisite, and pyroxene.

The paragneisses are medium-grained, equigranular, or granoblastic in texture, with a pronounced banded or bedded structure.

Modal analyses of typical paragneisses are shown in Table 1.

Table 1 *Modal analyses of typical paragneisses from Sinclair township, Highway 514*

MINERALS	APPROXIMATE PERCENTAGE BY VOLUME	
	Sample No. 1	Sample No. 2
Biotite	12	8
Quartz	31	10
Plagioclase	53	63
Garnet	4	....
Hornblende	....	19

The plagioclase is commonly oligoclase. Grain size ranges from 0.2 to 0.5 mm. Garnet porphyroblasts may be 1 to 3 mm. in size. The biotite is a normal brown variety. Iron oxide minerals are uniformly scattered through the rock. Through introduction of microcline these rocks commonly grade into granitic gneisses with alternating pink, grey, and black bands.

Satterly (1942, p. 7) notes:

> At some of the old mining properties in Cowper (Spider)[1] bay and on Cowper (Spider)[1] lake, medium- to coarse-grained garnet-rich biotite gneisses occur. These seem to represent partially pegmatitized sedimentary garnet-biotite gneiss, as in the same region garnet pegmatites occur and are thought to represent the end product of this pegmatitization. The occurrence of swarms of sillimanite needles, penetrating or included in the garnet, and the presence of green spinel in these garnet gneisses on Cowper Lake[1] indicate a high degree of metamorphism.

Spider Bay, unnamed on Map 2118, is at Lat. 45°13′N., Long. 80°06′W. Garnet-rich paragneiss interbanded with garnet amphibolite is found on the north shore of Parry Island near Depot Harbour. These garnet deposits were explored and tested by Garnet Abrasives Corporation Limited in the 1920s. Some garnet-kyanite paragneiss is found on the property.

Quartzite

Associated with the paragneisses in the northeastern part of the area are quartzites composed predominantly of quartz grains from 0.1 mm. to 0.5 mm. in diameter, with accessory biotite, hornblende, hypersthene, and minor apatite, titanite, and opaques.

Amphibolite

The amphibolites are medium-grained equigranular rocks composed predominantly of hornblende and plagioclase (usually andesine or oligoclase). Biotite, quartz, clino-pyroxene and ortho-pyroxene, scapolite, and garnet are characterizing accessories that may be present in substantial amounts. Carbonate, epidote, zoisite, titanite, pyrite, magnetite, and apatite may occur as minor accessories. In this report-area, instead of the usual augite or diopside, the pyroxene is frequently hypersthene. Texturally these rocks are even-grained and granoblastic.

[1]Spider Bay and Spider Lake are the official names recognized by the Canadian Permanent Committee on Geographic Names, Ottawa.

Parry Sound–Huntsville area

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Photo 1—Gently dipping hypersthene quartzite, Highway 60 east of Huntsville, north side of Fairy Lake.

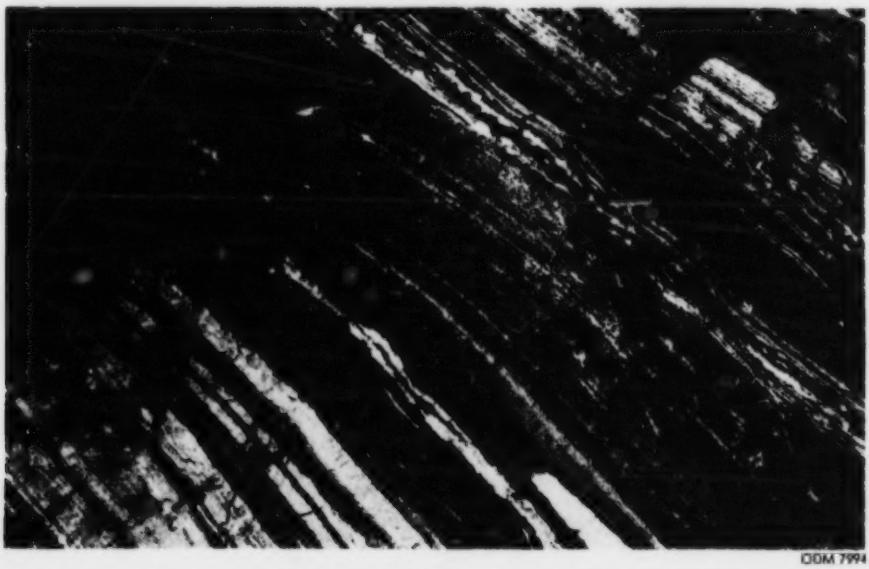

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Photo 2—Banded amphibolite gneiss interbanded with stringers of granitic gneiss and pegmatite, Highway 69 Parry Sound.

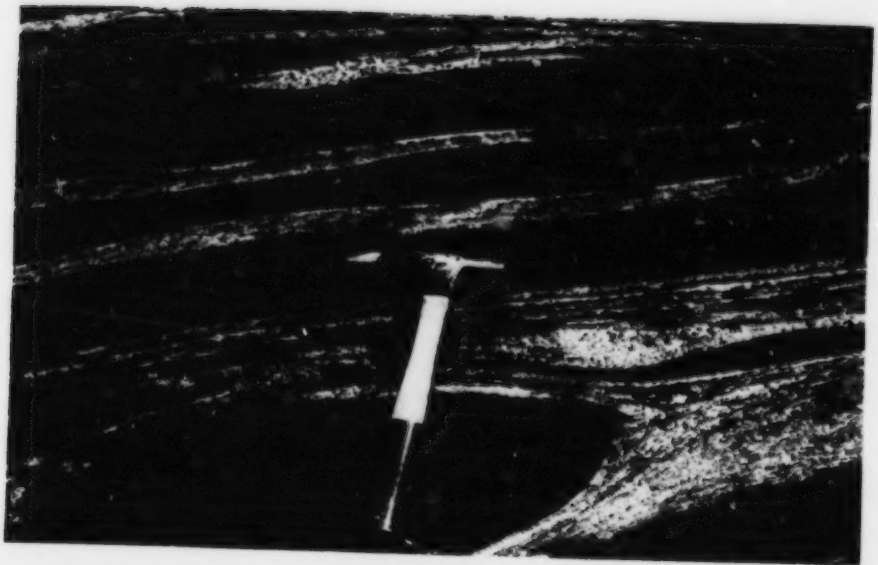

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Photo 3—Amphibolite cut by bands of granitic gneiss, Parry Island, near Depot Harbour.

With changes in mineral composition, the amphibolites grade into pyroxene granulite, hornblendic quartzite, and hornblendic paragneiss. With the addition of microcline and microcline microperthite these rocks grade into banded and veined migmatites, which form a large part of the country rock of the area.

Table 2 | *Modal analyses of some typical amphibolites*

MINERALS	APPROXIMATE PERCENTAGE BY VOLUME		
	Sample No. 1 (Hwy. 69 bypass, Parry Sound)	Sample No. 2 (Killbear Pt., Carling twp.)	Sample No. 3 (Parry Island)
Hornblende	3	21	36
Plagioclase	82	55	58
Biotite	2	11	2
Garnet	10	....	....
Scapolite	3	....	....
Quartz	....	13	4

Amphibolites are common in Cowper, Foley and McDougall townships in the vicinity of Parry Sound. The contacts between the amphibolite and the migmatized amphibolite are gradational and depend on the amount of injection of granitic material. The contact is therefore arbitrary and indicates an increase in the percentage of neosome to paleosome, or injected to original material.

ODM 7996

Photo 4—Well-banded white crystalline limestone containing narrow bands of hornblende rock, Seguin River, lot 9, concession XI, Christie township.

Detailed mapping would be required to divide the amphibolite rocks into those of sedimentary and intrusive origin. Some of the amphibolite gneiss on the property of the McGown mine in Foley township appears to be metadiorite or metagabbro.

Marble

Marble is quantitatively unimportant in the Parry Sound–Huntsville area, and only a few narrow bands are known. Most of these bands are too narrow to appear on Map 2118 (back pocket). In the early days of Parry Sound, marble was used for burning lime. Thin bands of white calcitic marble are interbanded with amphibolite on Rose Island. Miller (1904, p. 94) reports that "crystalline limestone is said to occur at the head of the bay, about one mile west of the Indian village on the south side of Parry Island, which would be the most southern known exposure of the Parry Sound [marble] band." Marble outcrops with amphibolite on a trail in lot 30, concession IX, Foley township. It has been reported on lot 30, concession XI, Foley township (Miller, 1904, p. 94).

A narrow marble band outcrops in a railway cut on the eastern end of the town of Parry Sound. Miller (1904, p. 93) reports that calcitic marble outcrops on lot 28, concession I, McDougall township, about a mile east of Parry Sound, where the stone was quarried for lime burning. The band "dips westward at a high angle, and consists of 12 feet of pure friable light pink and green, coarsely crystalline limestone, underlain by twenty or thirty feet of similar limestone, interstratified with gneissic beds, and holding pebbles and concretions," (Miller 1904, p. 93). This is evidently a marble tectonic breccia produced by flowage.

Marble is further reported on the north part of lot 22, concession I, McDougall township and on lot 18, concession II, McDougall township "on a small peninsula at the east end of Mill Lake, where it consists of about sixty feet of creamy-white and light-pinkish coarsely crystalline limestone" (Miller 1904, p. 94). Marble outcrops on the shore of Mill Lake in lot 18, concession III, McDougall township, and at the east end of Manitouwabing Lake in concessions VI, VII, and VIII of McKellar township. Outcrops may be seen on the road in lot 20, concession VII, McKellar township.

A narrow band of marble outcrops in lot 10, concession II, Ferguson township, on the northwest side of Harris Lake. Marble is exposed in the creek at the bridge on Highway 518 in lot 9, concession XI, Christie township. There is another exposure of marble half a mile to the north. The most easterly exposure of marble is a narrow band at Bear Lake in Monteith township. None of these occurrences are large enough to be of commercial significance. A small lime kiln was erected in the 1870s at Bear Lake, and a pit measuring 15 by 15 by 10 feet deep was put down in the crystalline limestone. A minor amount of lime was produced for local use.

PLUTONIC ROCKS

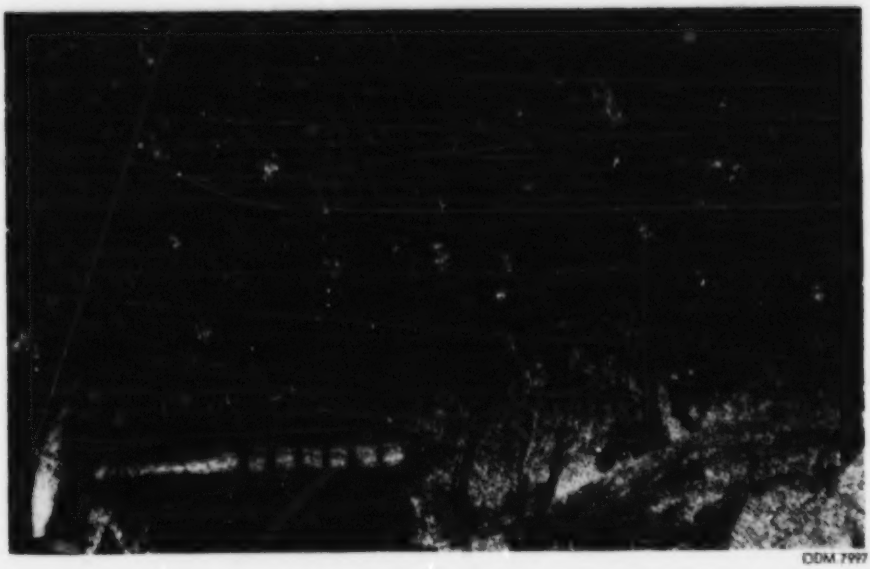
Basic Intrusive Rocks

The oldest plutonic rocks in the area are a series of basic intrusive rocks including diorite, metadiorite, gabbro, metagabbro, anorthosite, peridotite, harzburgite, olivine amphibolite, and hypersthene quartz diorite. Fresh quartz diabase of Keweenawan type cutting the granitic gneisses is reported by Satterly (1942, p. 12) in Franklin township just east of the area covered in Map 2118. Diabase was not observed in the map-area but probably is present.

Parry Island Anorthosite

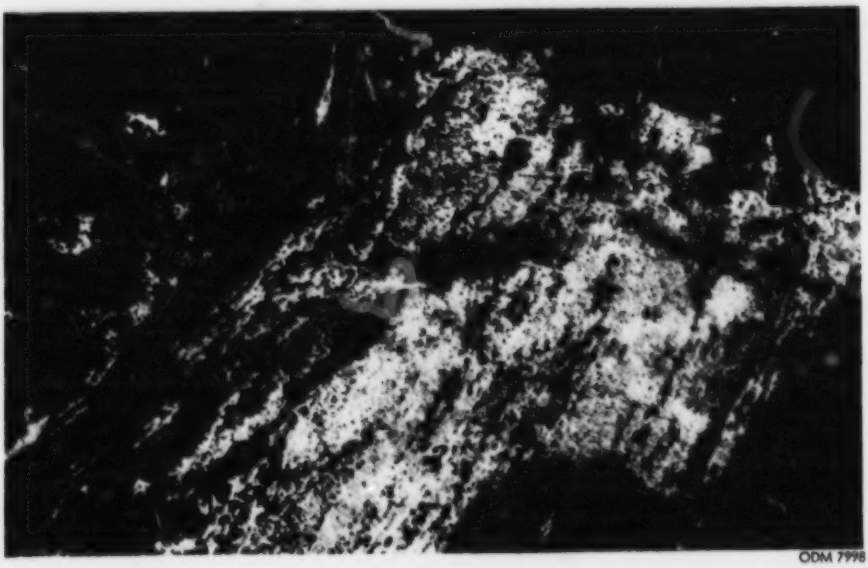
The Parry Island anorthosite is an intrusive body about six miles long in a north-south direction, and two miles wide. It forms the west shore of Parry Island and extends to a large group of islands in Waubuno Channel. The anorthosite extends as much as two miles inland from the shore. It is well exposed along the shore and on wave-swept islands. The interior of Parry Island is low-lying and heavily wooded, and outcrops are poor.

The anorthosite is a medium-grained equigranular rock composed almost entirely of labradorite feldspar. Weathered surfaces are tan to grey in colour, and weather to smooth rounded outcrops. The anorthosite has an interlocking texture and differs from the Five Mile Bay anorthosite in a lack of granulation. Some gneissic layering is present in places in the anorthosite, especially near the contacts. The following chemical analysis of a sample of anorthosite from the south end of an island just northwest of Bear Head is given in Table 3. (Bear Head, unnamed on Map 2118, is at Lat. 45°13′N., Long. 80°11′W.)



ODM 7997

Photo 5— Stretched, broken and faulted bands of hornblende rock in anorthosite, west shore of Parry Island, half a mile north of Caswell Bay.



ODM 7998

Photo 6—Banded border phase of the anorthosite carrying clots of hornblende; north contact of the anorthosite on Parry Island.

Table 3 — *Chemical analysis of anorthosite, northwest of Bear Head (Satterly 1942, p.12)*

	percent		percent
SiO_2	53.16	MgO	trace
Al_2O_3	31.64	K_2O	0.47
Fe_2O_3	0.64	Na_2O	3.52
CaO	10.14	TiO_2	0.11
			99.68

The alumina content of this rock, 31.64 percent, makes it a potential source of aluminium. Some experimental work was done during World War II on extraction of alumina from anorthosite and other alumina-rich rocks. Satterly (1942, p. 13) reports that amphibolite bands occur in the anorthosite at this same locality (just northwest of Bear Head).

Satterly (1942, p. 13) also describes another area of the anorthosite on the Parry Island shore east of Oak Island. (Oak Island, unnamed on Map 2118, is at Lat. 45°17′N., Long. 80°14′W.) Here, grey and purplish anorthosite contains discontinuous bands of amphibolite. The anorthosite has been subjected to much movement indicated by a series of minor intersecting faults.

Opposite Palestine Island at the north end of the anorthosite body the rock is an even-grained grey anorthosite that is cut in places by dikes of garnetiferous quartz diorite. Thin sections of the anorthosite consist of a flood of equant grains of labradorite, with scarce biotite, hornblende, pyrite, and carbonate. Grain size is even and ranges in different specimens from 1 mm. to 3 to 6 mm.

The anorthosite intrudes amphibolite gneiss, and along the north contact with the amphibolite, some of the anorthosite contains appreciable hornblende and becomes a metagabbro. The anorthosite is surrounded on all sides by amphibolite. Along the east margin there is some migmatized amphibolite.

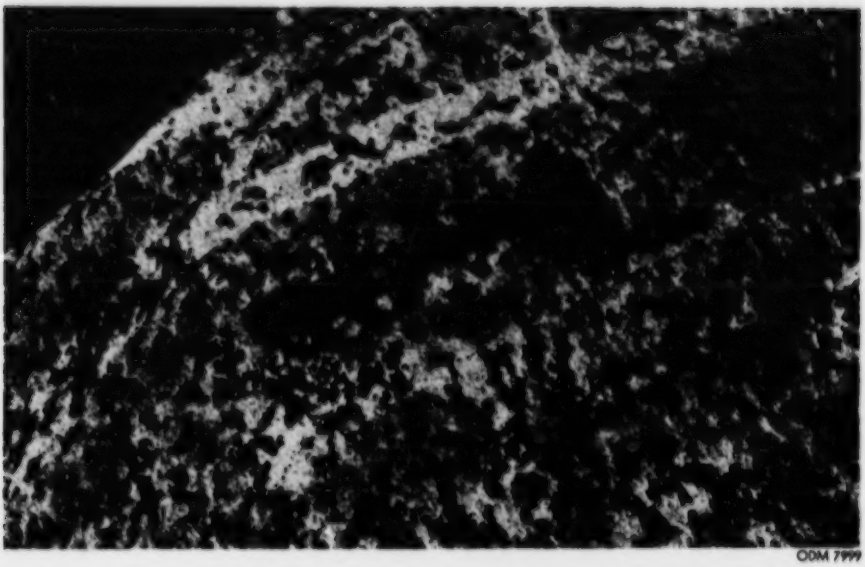
Five Mile Bay Anorthosite

Anorthosite and anorthositic gabbro are exposed for 2½ miles on Parry Island along the north shore of Five Mile Bay. The rock is medium to coarsely crystalline and grey-weathering. It is strongly sheared in places. Garnet is a characteristic accessory. The anorthosite is in contact with garnetiferous amphibolite on the north side, and bands of amphibolite appear in the anorthosite.

Thin sections indicate that the rock has been strongly sheared and mylonitized. The rock is composed predominantly of labradorite that shows strong granulation along grain boundaries. The grains show strain. Pyroxene may be present and is frequently surrounded by coronas of hornblende, garnet, and opaque minerals. Biotite is usually present, and there is an introduction of fine-grained secondary quartz and scapolite.

Twelve Mile Bay Anorthosite

Anorthosite was reported by T. L. Walker (1905, p. 86) on the shores of Twelve Mile Bay in Freeman township. This locality was not visited by the author.



ODM 7999

Photo 7—Metagabbro or "blotched diorite" phase of the Waubamik anorthosite; Harris Lake, Ferguson township. The dots are hornblende.

ODM 8001

Photo 8—Metagabbro phase of the Waubamik anorthosite, Ferguson township.

Waubamik Anorthosite and Metagabbro

An anorthosite body was described by W. C. Lacy (1960, p. 1715) in the Dunchurch area north of the Parry Sound–Huntsville map-area. The south end of this anorthosite body extends southward into the map-area on the west side of Harris Lake in Ferguson township, and crosses Highway 124 near Waubamik. The anorthosite present in the map-area grades into a metadiorite or metagabbro in which there is a substantial percentage of clotted ferromagnesian minerals, principally hornblende. Robert Bell (1876, p. 204) termed this rock "blotched diorite." The rock is massive, medium-grained to coarse-grained and white in colour with black aggregates of hornblende crystals up to 2 inches in diameter.

Manitouwabing Quartz Diorite

A hypersthene-bearing quartz diorite is exposed in McKellar township east of Manitouwabing Lake and along the Manitouwabing River. The rock is medium-grained and weathers yellow-brown. Thin sections indicate the rock is composed of quartz, oligoclase, and hypersthene with minor hornblende, apatite, and opaque minerals.

Milford Bay Basic Intrusive Rocks

Two miles east of Milford Bay there is a basic intrusive body extending through lots 17 to 20, concessions X, XI, and XII, Monck township. For the most part the basic intrusive is highly metamorphosed, but various facies are present in the body. One specimen taken is a norite composed of: labradorite, 45 percent; hypersthene, 49 percent; hornblende, 1 percent; biotite, 2 percent; magnetite, 3 percent; and minor apatite. Other facies are diorite gneiss carrying garnet and(or) hypersthene.

Brackenrig Bay Peridotite

A small circular body of peridotite about ½ mile in diameter is exposed on the road at Brackenrig Bay on concessions IV and V, Watt township. The peridotite is deeply weathered, and it is quarried for road gravel. A thin section of the highly serpentinized rock discloses abundant serpentine, pyroxene, relict olivine, scapolite, and opaques.

Port Cunnington Peridotite

A small circular body of serpentinized peridotite about a mile in diameter is exposed just east of Port Cunnington in Franklin township. The peridotite is deeply weathered to a gravel and is quarried in two pits for road gravel. Thin sections of the peridotite are composed of serpentine, relict olivine, pyroxene, chlorite, green spinel, and opaque minerals. The olivine is much fractured and cut by serpentine veinlets carrying fine opaque minerals. The peridotite is cut by veins of olivine-grey deweylite, a variety of serpentine that has the conchoidal fracture and the appearance of chert but is much softer. In places, mica is present in the peridotite.

Parry Sound–Huntsville area

Part of this peridotite body is exposed on Haystack Island in Lake of Bays. (Haystack Island, unnamed on Map 2118, is at Lat. 45°16′N, Long. 79°00′W.) This island was first described by Parks (1900, p. 123) as consisting of harzburgite, a variety of peridotite.

Weeduck Lake Harzburgite

A dike of harzburgite near Weeduck Lake is described by Satterly (1942, p. 15) as follows:

> On a road south of Fairy lake in lot 18, concession XIII, Brunel township, Muskoka district, a gravel pit exposes a 30-foot width of a shattered and partially altered ultra-basic rock. The crumbled ultrabasic rock has been used as road metal. Outcrops beside the road on either side of the gravel pit expose pink and black, hybrid biotite gneiss, and the ultrabasic rock appears to form a dikelike mass trending northwest. A thin section of a fresh sample under the microscope shows olivine encased in or rimmed by hypersthene with deep-green hornblende as a granular aggregate interstitial to the olivine-hypersthene coronites. The rock is a slightly altered peridotite of the variety known as harzburgite.

Black Rock Island

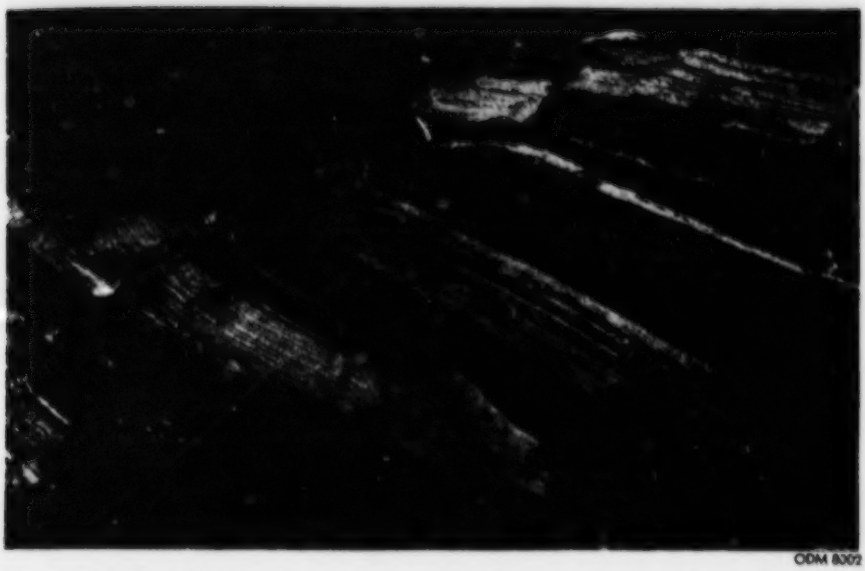
An unusual olivine amphibolite from Black Rock Island[1] (unnamed on Map 2118) in Blackstone Lake, Conger township, District of Parry Sound has been described by Friedman (1953, p. 661-673). The amphibolite is reported to consist of cummingtonite, olivine and serpentine with small amounts of spinel, magnetite and chlorite. Diorite dikes cut the amphibolite.

Migmatites and Granitic Gneisses

The predominant rock type found in the area is migmatite gneiss composed of original metasedimentary material, usually paragneiss or amphibolite, that has been injected, intruded, or permeated by younger granitic material to form a composite, hybrid, or mixed gneiss. Migmatites are composed of the original metasedimentary material known as the paleosome, and the introduced granitic or syenitic igneous material known as the neosome or metatect. In this map-area the migmatites were classified on the basis of three variables:

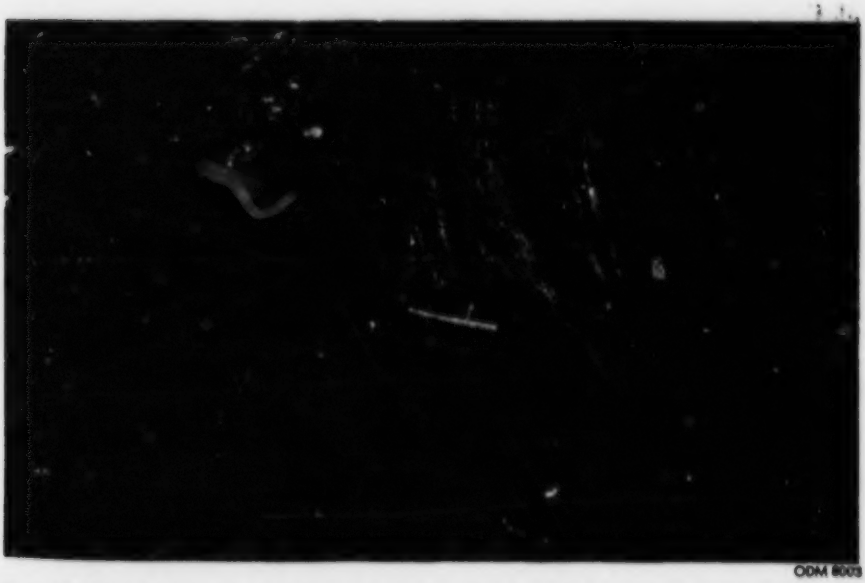
1. The type of original metasedimentary material: This is commonly either paragneiss, which gives rise to a ***biotite migmatite;*** or amphibolite, which gives rise to a ***hornblende migmatite.*** Both biotite and hornblende are frequently present, but one usually dominates. Garnet is frequently present.
2. The structure of the migmatite: The structural classification for migmatitic gneiss follows that used by Berthelsen (1961, p. 69) in southwestern Greenland. Three major structural types of migmatitic gneiss were mapped. These are ***banded migmatite*** made up of alternating well-defined layers of different composition showing good linear continuity; ***veined migmatite*** characterized by a non-uniform pattern of sub-parallel, branched, discontinuous, and more or less irregular granitic and mafic bands; and ***homogeneous migmatite,*** which shows little or no banding but distinct mineral alignment.

[1]Black Rock Island is the local name and has not been approved by the Canadian Permanent Committee on Geographic Names, Ottawa.



ODM 8002

Photo 9—Banded hornblende migmatite, moderately granitized, Highway 69 near Parry Sound. This migmatite is made up of alternating well-defined layers of different composition.



ODM 8003

Photo 10—Banded hornblende migmatite, moderately to strongly injected by granitic bands, Parry Island, near Depot Harbour.

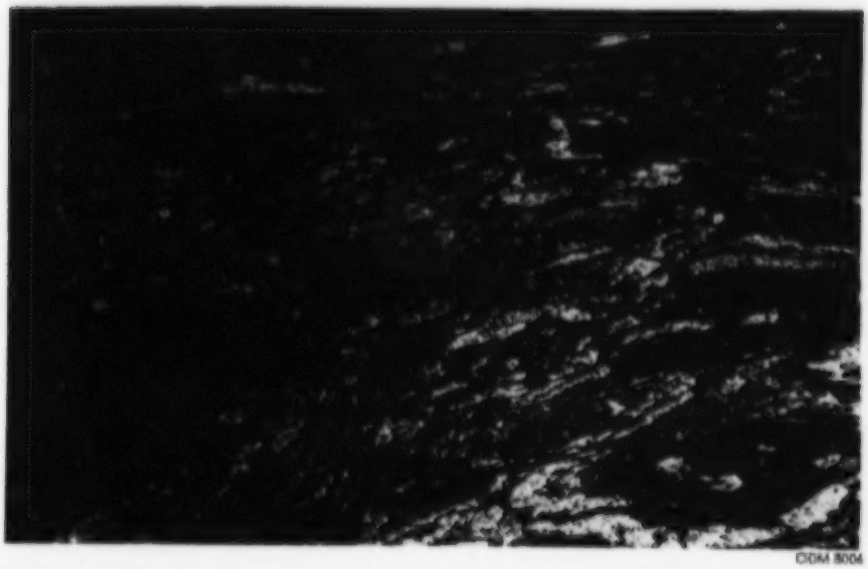
Parry Sound–Huntsville area

ODM8004

Photo 11—Banded hornblende and biotite migmatite slightly granitized, Highway 11 near Bracebridge.

ODM 8005

Photo 12—Banded hornblende migmatite, strongly granitized, Highway 532, Macaulay township. Few relict bands of amphibolite can now be recognized in the gneiss, but there is abundant hornblende strung out in the granitic gneiss.



ODM 8006

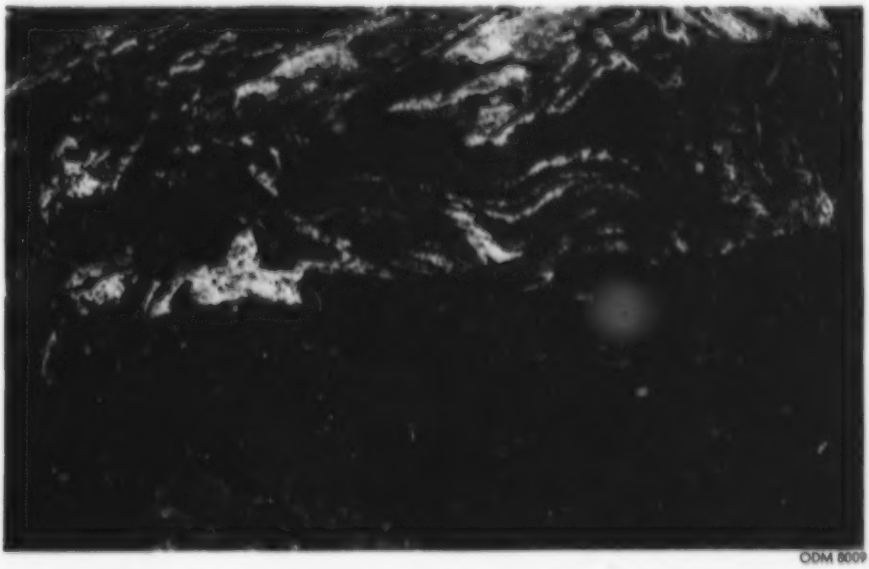
Photo 13—Veined hornblende migmatite, moderately granitized; irregular, crenulated and branching veinlets of granitic material cut the amphibolite, Highway 103 at MacTier.

ODM 8007

Photo 14—Veined hornblende migmatite, moderately granitized; crenulated and branching veinlets of granitic material are irregularly distributed in the amphibolite, Highway 103 near MacTier.

ODM 8008

Photo 15—Smallfolded hornblende migmatite, strongly granitized, Highway 103, near MacTier.



ODM 8009

Photo 16—Agmatitic hornblende migmatite, strongly granitized, Highway 103, Freeman township.

3. The degree of granitization of the migmatite: Where the percentage of introduced granitic material (metatect) is 10 to 25, the migmatite is termed *slightly granitized;* where the percentage of introduced granitic material is 30 to 50 percent, the migmatite is termed *moderately granitized;* where the percentage of introduced granitic material is over 50 percent, the migmatite is termed *strongly granitized.*

The strongly granitized migmatites grade into pink and grey granitic gneisses with little relict metasedimentary material apparently remaining.

Microscopically the migmatites consist of microcline and microcline microperthite, oligoclase, quartz, biotite, and hornblende, with accessory apatite, zircon, titanite, and magnetite. Garnet is sometimes an accessory.

Pegmatite

Pegmatite veinlets are a part of many of the granitic migmatites, and pegmatitic material is frequently a substantial part of the metatect in the migmatite. Large pegmatite dikes, which have been worked for feldspar and mica, are found in Conger, McDougall, and Ferguson townships.

Other Acid Intrusive Rocks

True granitic intrusions appear to be uncommon in the area. One acid intrusive body about 2 miles long and 2 miles wide, occupies the southwest corner of Watt township on both sides of Brandy Lake. The rock is a massive yellow-brown slightly gneissic quartz mangerite (monzonite) composed of quartz, oligoclase, antiperthite, hypersthene, hornblende, biotite, opaque minerals, and occasional garnet. Myrmekitic intergrowths are present. Porphyroclasts of antiperthite are common in some facies. It appears to be a charnockitic rock of the monzonite series.

Table 4 | *Residual analyses of the Brandy Lake body*

	MINERAL PERCENTAGE BY VOLUME				
	Sample No. P641	Sample No. P644	Sample No. P645	Sample No. P646	Sample No. 6320
Quartz	19	32	19.5	30	22
Oligoclase	45	27	40.5	26	38
Antiperthite	18	26	16.5	30	25
Hypersthene	10	3	8	7	1
Hornblende	2	3	11.5	4	8
Biotite	4	8	0	0	3
Opaques	2	0	4	3	3
Garnet	0	1	0	0	0

Ordovician Limestone

The only outcroppings of Ordovician limestone in the area are the North and South Limestone Islands in Georgian Bay, about 24 miles west of Parry Sound. North Limestone Island lies at about Lat. 45°25′N, Long. 80°33′W. It is a low-lying shelf of limestone approximately ¾ mile long. The South Limestone islands lie at 45°22′N, 80°32′W. The two larger islands are approximately ¼ mile long. The islands have no suitable harbours.

An analysis of limestone from the islands is found in Table 5.

Table 5 — *Analysis of limestone from the North and South Limestone islands (Miller 1904, p. 92)*

	percent
Calcium carbonate	94.48
Magnesium carbonate	4.03
Alumina and ferric oxide	0.52
Silica	0.76
	99.79

A gravel pit being operated in Watt township on the west side of Nutt Lake (unnamed on Map 2118) just south of Skeleton Lake, has a large number of Ordovician limestone pebbles in the gravel. No known source of Ordovician limestone exists between Skeleton Lake and Lake Nipissing, but the large number of Ordovician pebbles suggests a nearby source. It is possible that a covered outlier of Ordovician limestone may exist in the neighbourhood of Skeleton Lake. This occurrence was drawn to the author's attention by L. J. Chapman.

Pleistocene and Recent Deposits

The map-area was covered in Pleistocene times by a thick ice-sheet. During the withdrawal of the ice-sheet to the north the area was covered by the waters of glacial Lake Algonquin. Extensive glacial deposits of sand and gravel exist in the area. Sand and gravel are quarried at Bracebridge, Milford Bay, Parry Sound, Huntsville, Novar, Raymond, and Utterson. Clay deposits are worked at Huntsville for the manufacture of brick and tile, and at Bracebridge for the manufacture of tile.

Recent deposits of peat and diatomite are found in some of the lakes and swamps in the area.

STRUCTURAL GEOLOGY

The gneisses of the area are highly folded, and major fold structures are easily seen in air photographs. Perhaps the most striking large syncline is the Moon River syncline in Conger and Freeman townships. The synclinal structure

is at least 8 miles wide and over twenty miles long. The syncline plunges southeast, and Healey and Kapikog lakes in Conger township occupy depressions parallel to the synclinal structure of the gneisses. The Moon River for part of its length flows along the strike of the gneisses of the south arm of the syncline. A northward extension of the main syncline extends to Horseshoe Lake in Foley township.

A synclinal axis extends from Footes Bay to Bala Park. There is a small synclinal basin centred at McGruther Lake in McDougall township. A gentle dome occupies the area between Rosseau and Humphry in Humphry township. There is a pronounced east-west synclinal axis running through Ufford south of Skeleton Lake in Watt township. A northwest-trending synclinal axis passes through Stisted township west of Aspdin. A gentle northwest-trending domical axis extends from Bracebridge to Milford Bay. There is a minor folding in the granitic migmatitic gneisses in Carling township. The amphibolites at Parry Sound swing in a broad arc from Waubamik through Parry Sound, Depot Harbour, Rose Island, and Sandy Island. A northwest-trending anticline passes through Nobel.

Many of the linear inlets along the Georgian Bay shore are structurally controlled by the foliation of the country rock gneisses. Other inlets such as the Little Shebeshekong River (unnamed on Map 2118, it is at Lat. 45°25′N, Long. 80°19′W.) and Snug Harbour are controlled by regional fracturing or joint patterns, which cut across the gneisses. The Seguin River west of Isabella Lake follows a fracture pattern trending across the gneisses. Much of the drainage is controlled by the structure of the gneisses.

Locations of some lineaments apparent on the air photographs are shown on the map. These lineaments mark the location of fracture or fault patterns in the rock. Flowage features are present in places in the gneisses, and a limited amount of small-scale wild folding is indicative of deep-zone metamorphism. Minor faulting is seen in places, as in the anorthosite on Parry Island. Flowage is indicated in the marble bands by the presence of marble tectonic breccias.

ECONOMIC GEOLOGY

Mineral production in the area is confined to industrial minerals, principally sand and gravel, clay, building stone, and road stone. Other industrial minerals present include diatomite, silt, feldspar, mica, and garnet. Possibilities are good for further development of the production of building stone, and sand and gravel.

The principal metallic mineral of interest is copper. There is a small group of copper deposits containing bornite, chalcopyrite, and chalcocite in the amphibolite gneisses of Cowper and Foley townships. Although copper mineralization is widespread, no deposits of economic size have been opened as yet.

Many of the descriptions of mineral deposits given in this report are taken verbatim from two previous reports of the Ontario Department of Mines: "Mineral occurrences in the Parry Sound District" by J. Satterly, published in 1943, and "Mineral occurrences in the Haliburton Area" by J. Satterly, published in 1943.

Aluminium

The Parry Island anorthosite, which runs over 30 percent alumina, with a very small content of mafic minerals, is a potential alternative to bauxite as a source of alumina. Its alumina content is about the same as higher-grade nepheline syenite gneisses of the Bancroft area, but the mafic content of the anorthosite is substantially lower.

Clay

DISTRICT OF MUSKOKA

Chaffey Township

Concession I, Lot 8. The Huntsville brickworks is in lot 8, concession I in Chaffey township. It is on the east side of the Huntsville bypass on Highway 11 at Huntsville. The clay is obtained from a pit on the property where there is 8 to 15 feet of thinly varved grey-brown clay. The varves range from $\frac{1}{16}$ to 1 inch in thickness. The clay is scooped up by a tractor with a small ($\frac{1}{4}$-yard) rear-end scoop and transported to a platform at the plant. The clay goes via conveyor to a pug mill that feeds a soft-mud brick machine; the green bricks are air-dried. Two beehive kilns have capacities of 40,000 and 50,000 bricks and a rectangular down-draft kiln holds 65,000 bricks. The kilns are wood-fired, and the product is mainly red-face brick. The plant operates from May to October.

Draper Township

Concession XIII, Lots 4, 5. A tile plant is operated by Home Brick Limited on the southeast outskirts of Bracebridge, on lots 4 and 5, concession XIII, Draper township, District of Muskoka. Up to 12 inches of topsoil and roots are stripped from a 10-foot clay bank. The clay is red-burning, uniform olive-green to red-brown, and varved; stones are rare. Clay is excavated by powershovel and trucked to a shed-covered storage area where a 2-month supply of clay can be stocked. The clay is transported from storage to a pug mill. It is then conveyed from pug mill, by rolls, to an extrusion machine. The tiles go to tunnel dryers. Tiles are fired in 4 beehive kilns fired with wood. Brick and flue liners are produced occasionally.

Copper

A large number of small copper deposits occur in Cowper and Foley townships near Parry Sound. Massive and disseminated chalcopyrite, bornite, and chalcocite are found with pyrite and pyrrhotite along mineralized shear zones in amphibolite and paragneiss. Quartz is sometimes present, but the mineralization is not usually in quartz veins. Owing to the lack of discrete vein structures, the mineralization is frequently rather patchy. Disseminated copper sulphide mineralization is widespread in the amphibolite gneisses of Cowper and Foley townships, and many testpits and shafts were sunk from 1893 to 1900.

Early copper mining in the Parry Sound area is described by Coleman (1899; 1900).

DISTRICT OF PARRY SOUND

Carling Township

Concession VII, Lots 40 and 41. Two test pits were put down in 1899 on these lots 40 and 41, concession VII, Carling township. On lot 41 hornblende gneiss occurs as a band, 3 chains in width trending N35°W and dipping 30°N.E., in grey granite gneiss. The dump around the test pit, which is near the shore, shows coarse, hornblende pegmatite, some carbonate, and traces of disseminated chalcopyrite. On lot 40 just east of the boundary line between lots 40 and 41 a test pit, 10 by 10 feet, has been sunk on a quartz-rich pegmatite in grey granite gneiss. No mineralization was seen. (Satterly 1942, p.21.)

Cowper Township

Concession IV, Lot 15. On the north shore of Cowper (Spider) lake[1] on lot 15, concession IV, Cowper township, an open cut 6 feet wide, 20 feet long, and 8 feet deep at the north end exposes pegmatitized garnet-biotite gneiss. The more pegmatitic portions are mineralized with pyrrhotite, some chalcopyrite, and rarely molybdenite. (Satterly 1942, p.22)

Concession IV, Lot 16. A shaft, 6 by 6 feet in diameter, has been sunk 2 chains east of the Cowper (Spider) lake[1] end of the portage between Cowper (Spider) lake[1] and Cowper (Spider) bay[1] on lot 16, concession IV, Cowper township. The country rocks are garnet pegmatite and granite gneiss with bands of amphibolite. The shaft is sunk on a garnet quartz-rich pegmatite near the footwall of a garnet amphibolite band trending N.50°E. and dipping 45°S.E. This amphibolite band is 10 feet wide and has an exposed length of 50 feet, being cut off at the northeast end by pegmatite. On the northwest side of the shaft on a face dipping 45°S.E., vuggy, blue-grey quartz containing little to much coarse pyrite and, rarely, chalcopyrite forms a band 3 to 6 inches wide and possibly 15 feet long. A grab sample of this material taken by the writer assayed 0.02 ounces of gold per ton. Grab samples from the dump, also taken by the writer, of rusty garnet pegmatite with minute fractures filled with chalcopyrite and splashes of pyrite showed no gold on assay. (Satterly 1942, p.22)

Spider Bay, unnamed on Map 2118, is at Lat. 45°13′N, Long. 80°06′W.

Concession IV, Lot 17, North Half. The Bayshore property on the north half of lot 17, concession IV, Cowper township was reported to have been drilled in 1951. A mineralized zone 260 feet long and 2 to 15 feet wide was indicated. Chalcopyrite and sphalerite mineralization is apparently related to fractures cutting the bedding of the paragneisses at an angle.

Concession IV, Lots 18, 19, 20, 21, and 22 (Wilcox Mine). The following is taken from Satterly (1942, p. 22, 23):

The old Wilcox property is located on the north shore of Cowper (Spider) bay[1] and consists of the southern parts of lots 18, 19, 20, 21 and 22 in concession IV, Cowper township. These part lots are fully patented and owned by Otto Monson, 334 Endicott Building, St. Paul, Minn. There is no road to the property, but it may be easily reached by boat from Parry Sound, which is 12 miles to the northeast.

Waterways Copper Mines, Limited, incorporated in 1939, had an option on the Wilcox property and staked a considerable amount of additional ground, 64 claims in all, on strike to the northeast of the Wilcox property. Most of these claims have been allowed to lapse. The company made a surface examination and put down 9 diamond-drill holes in 1939. A geological sketch of the old workings is given [in Figure 2 in this report] and the location of the diamond drill holes [in Figure 3 in this report]. The Wilcox property was discovered in 1893 by Henry Harris and Thomas Wilcox. The Parry Sound Copper Mining Company, Limited, was incorporated in 1899 to develop this property, and its holdings were sold in 1917. Active work at the property took place between 1893 and 1904 with some additional work in 1910.

[1]Spider Lake is the official name recognized by the Canadian Permanent Committee on Geographic Names.

Figure 2—Geological sketch map of the Wilcox mine.

From 1957 to 1961 the Wilcox Mine was owned by Kalbrook Mining Company Limited.

Satterly (1942, p. 22, 23) continues:

The geological sketch map of the old workings [Fig. 2 in this report] shows that a series of mineralized bands or lenses occur in a garnet-rich biotite gneiss at intervals over a length of 2,500 feet in a northeasterly direction from Cowper [Spider] bay. The garnet-rich biotite gneiss is flanked on the south by a hypersthene-hornblende gneiss.

The mineralization seen in a series of pits will be briefly described. Frank Paradis acted as a guide to these pits.

The open cut extending northeast from Cowper [Spider] bay for 100 feet is now almost entirely filled with broken rock, mainly a coarse-grained garnet-rich biotite gneiss, some of which shows a little disseminated chalcopyrite. A grab sample taken by the writer showed no gold. The shaft just northeast is reported to be 175 feet deep.

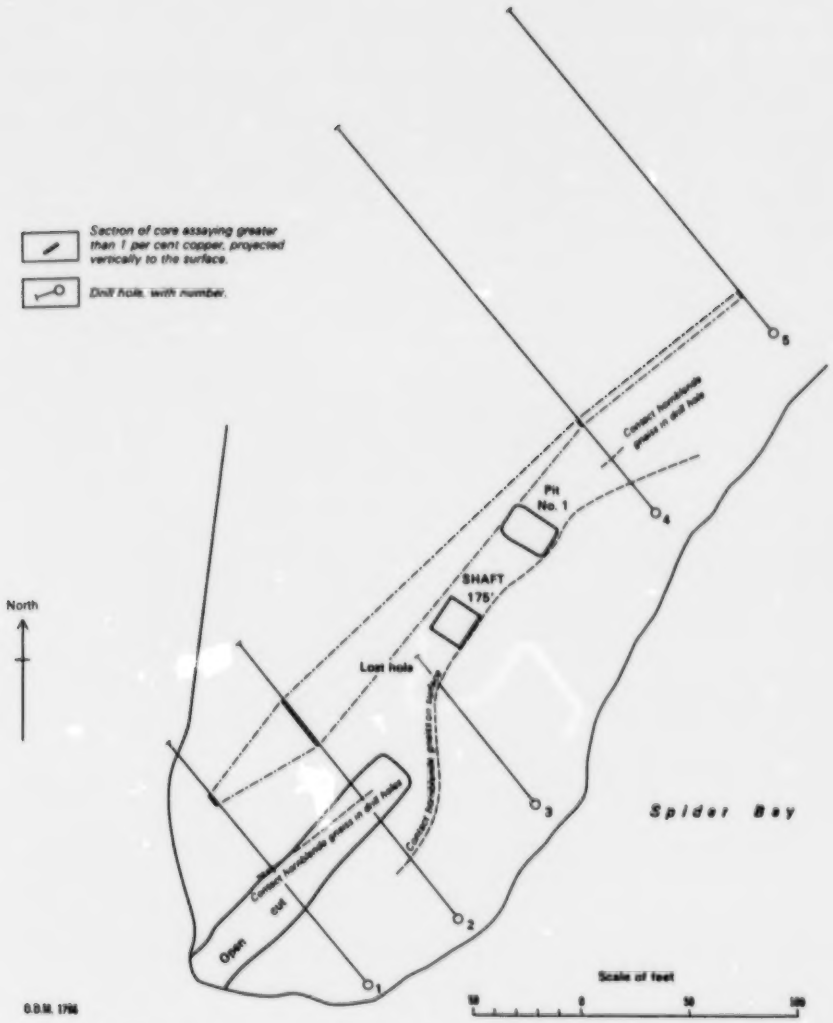


Figure 3—Sketch map showing the location of diamond-drillholes Nos. 1 to 5 at the Wilcox mine.

Pit No. 1: Just northeast of the shaft pit No. 1 exposes biotite-garnet gneiss with disseminated chalcopyrite and pyrite. A chip sample taken by the writer across the width of the zone, 12 feet, assayed 1.09 percent copper. The hornblende gneiss forms a band 70 feet wide adjoining the mineralized zone on the south.

Pit No. 2: Grey, glassy quartz and plagioclase with fractures and vugs filled with chalcopyrite and pyrite are exposed in pit No. 2 which is quite shallow. Garnet and hornblende are present. A grab sample taken by the writer assayed no gold. The country rock is the biotite-garnet gneiss.

Pit No. 3: Garnet gneiss, somewhat rusty, is exposed in pit No. 3, but no sulphides were found. A little sulphide was seen in some blocks of gneiss in the creek just to the northeast.

Pit No. 4: Rusty garnet gneiss is also exposed in pit No. 4, but very little sulphide was found.

Pit No. 5 and Shaft: Pit No. 5 is largely filled with waste rock from the 35-foot shaft. Mineralized rock was found on the dump. A grab sample taken by the writer of rusty, medium-grained, pegmatitized biotite gneiss with disseminations and irregular splashes of chalcopyrite, pyrrhotite, and pyrite showed a trace of gold on assay. Some of the chalcopyrite fills fractures. A grab sample taken by the writer of sphalerite-rich material from the dump consisting of reddish-black sphalerite, chalcopyrite, and rarely pyrrhotite gave 0.01 ounces of gold per ton on assay.

Pit No. 6: Grab samples were taken by the writer of the best material on the dump of pit No. 6, which was full of water. One sample of a dark biotite gneiss with bluish-grey quartz containing splashes and disseminations of chalcopyrite, some sphalerite, and very little pyrite, gave 0.02 ounces of gold per ton. Another grab sample showing pyrrhotite, pyrite, and some chalcopyrite in a dark biotite-hornblende gneiss also assayed 0.02 ounces of gold per ton.

Pits Nos. 7 and 8: These pits were not examined.

Data on the diamond-drilling by Waterways Copper Mines Limited, along with the assay results are shown in the table below. Information on some of the holes is not available.

Table 6 | *Data on the diamond-drilling on the Wilcox property*

Reproduced from a report by Murray Watts, published with the permission of Waterways Copper Mines Limited (Satterly 1942, p. 24, 25).

Hole	Dip	Direction	Core length	Description
			feet	
No. 1	45°	N. 23° W. mag.	206	0 to 49 feet, hornblende gneiss; 49 to 52 feet, pegmatite; 52 to 100 feet, hornblende gneiss with a number of narrow pegmatite dikes; 100 feet, contact between hornblende gneiss and biotite-garnet gneiss; 100 to 206 feet, biotite-garnet gneiss with some pegmatite dikes between 100 and 125 feet. Chalcopyrite mineralization from 100 to 206 feet, with better mineralization from 125 to 167 feet.
No. 2	45°	N. 23° W. mag.	231	0 to 100 feet, hornblende gneiss; 100 to 138.8 feet, rock unclassified owing to alteration: 138.8 to 231 feet, biotite-garnet gneiss. Chalcopyrite mineralization from 138.8 to 231 feet, with main mineralization from 138 to 188.5 feet and most concentration from 150 to 175 feet.
No. 3	..	..	..	Struck old drift at 125 feet and abandoned.
No. 4	45°	N. 23° W. mag.	300	0 to 42 feet, hornblende gneiss; 42 feet, contact; 42 to 300 feet, biotite-garnet gneiss. Chalcopyrite mineralization from 42 to 73.5 feet, with most mineralization from 42 to 50 feet and from 63.5 to 73.5 feet.
No. 5	45°	N. 23° W. mag.	275	0 to 275 feet, biotite-garnet gneiss. Two narrow bands mineralized with chalcopyrite from 31.9 to 33.1 feet and from 35.1 to 35.7 feet.
No. 6	45°	N. 23° W. mag.	208	0 to 208 feet, [biotite-garnet] gneiss with several narrow pegmatite dikes between 150 and 200 feet. Some chalcopyrite and iron pyrite from 26.7 to 28.6 feet.
No. 7	60°	N. 45° W. mag.	105	0 to 105 feet, [biotite-garnet] gneiss. A narrow band containing chalcopyrite from 37.65 to 38.75 feet.
No. 8	45°	N. (mag.)	140	0 to 140 feet, [biotite-garnet] gneiss with some narrow dikes of pegmatite between 41.35 and 45 feet. Ten inches of massive sphalerite at 110 feet.

Table 7 | *Assay results of diamond drilling of the Wilcox Property by Waterways Copper Mines Limited (Satterly 1942, p. 25)*

HOLE	SAMPLE NO.	FOOTAGE	LENGTH OF CORE	GOLD	SILVER	COPPER
			feet	oz. per ton	oz. per ton	percent
No. 1	No. 1	125–130	5	none	0.04	0.09
	No. 2	130–135	5	none	0.03	0.11
	No. 3	135–140	5	none	0.015	0.04
	No. 4	140–145	5	none	0.06	0.31
	No. 5	145–150	5	trace	0.08	0.37
	No. 6	150–155	5	trace	0.14	0.58
	No. 7	155–160	5	0.005	0.37	2.90
	No. 8	160–165	5	0.005	0.33	2.18
	No. 9	165–167	2	0.005	0.08	0.32
No. 2	No. 10	138–140	2	trace	0.05	0.15
	No. 11	140–145	5	0.005	0.15	0.90
	No. 12	145–150	5	0.005	0.41	2.74
	No. 13	150–155	5	0.01	0.30	2.24
	No. 14	155–160	5	0.01	0.49	3.43
	No. 15	160–165	5	0.005	0.56	3.50
	No. 16	165–170	5	0.01	0.24	1.06
	No. 17	170–175	5	0.01	0.27	1.64
	No. 18	175–180	5	0.005	0.27	1.68
	No. 19	180–185	5	0.005	0.16	1.80
	No. 20	185–188.5	3.5	0.005	0.09	0.79
No. 4	No. 21	42–45	3	trace	0.03	0.22
	No. 22	45–50	5	trace	0.03	0.19
	No. 23	63.5–68.5	5	0.005	0.19	0.55
	No. 24	68.5–73.5	5	0.005	0.32	2.12
No. 5	No. 25	31.9–33.1	1.2	0.005	0.41	4.11
	No. 26	35.1–35.7	0.6	0.005	0.13	1.00
No. 6	No. 27	26.7–28.6	1.9	trace	0.05	0.68
No. [?]	No. 28	[?]	[?]	trace	0.13	1.49

The following is taken from Satterly (1942, p. 26):

From the above information it is clear that there are several lenses of mineralization, as indicated in pits Nos 1, 5, and 6, and very lean or no mineralization in the lenses in pits Nos 2, 3, and 4. Other similar small lenses of mineralized garnet gneiss were mapped by Waterways Copper Mines, Limited.

Summing up, it appears that the copper values in the small lenses or bands of mineralized gneiss are marginal, that gold values are nil or less than $1.00 per ton, that no single lens is large enough to constitute an ore body, and that the lenses are too widely spaced to form an ore body in the aggregate under present conditions or at present prices for copper, zinc, and gold. In the future, some or all these factors may be suddenly changed and a re-examination required.

Concession IV, Lot 23. Eleven chains northeast of a small bay north of Spider point [unnamed on Map 2118] on the north half of lot 23, concession IV, Cowper township, there is a test pit, 6 by 15 feet in diameter, filled with debris. The country rock is granite gneiss with amphibolite to the northwest. Rock in the test pit and on the dump shows some pyrrhotite, and rarely, chalcopyrite in the amphibolite and *lit par lit* rusty pegmatite stringers. (Satterly 1942, p. 26)

Concession V, Lot 9. A shallow pit on the shore of Cowper [Spider] lake on lot 9, concession V, Cowper township, exposes garnet amphibolite and pegmatite. Disseminated pyrrhotite, locally pyrite, and very rarely molybdenite occur in the amphibolite. (Satterly 1942, p. 26)

Concession V, Lot 13. A pit, 6 feet in diameter and 4 to 5 feet deep, 18 chains north of Cowper [Spider] lake in lot 13, concession V, Cowper township, has been sunk on a mineralized zone in a sedimentary gneiss band occurring in a fine-grained amphibolite. Some of the sediment is a banded biotite-poor quartzite. The mineralized zone ranges from 4 to 5 feet in width and can be traced for 2 chains northeastward on the strike. It consists of from 5 to 25 percent pyrite or pyrite and pyrrhotite, with biotite and quartz. (Satterly 1942, p. 26)

Concession V, Lot 14. A shaft, 7 by 8 feet and 23 feet deep, has been put down on the top of a high ridge 12 chains north of Cowper (Spider) lake on lot 14, concession V, Cowper township. The rock exposed in the shaft is amphibolite containing a band of rusty pegmatite. Disseminated pyrrhotite occurs in the amphibolite, and fine to coarse splashes of pyrrhotite in the pegmatite. Some pyrite and, very rarely, molybdenite are found. A grab sample taken by the writer showed no gold on assay. No trace of sulphide mineralization was found in the outcrop away from the shaft (Satterly 1942, p. 26)

Concession V, Lot 20. A considerable amount of stripping and one shallow test pit are found between two small lakes on lot 20, concession V, Cowper township. The rock exposed is a garnet-biotite gneiss with several 6- to 12-inch bands of black or rusty-weathering white garnet gneiss containing disseminated magnetite and some pyrrhotite and pyrite. The bands strike N.60°E. and dip 55°S. (Satterly 1942, p. 26)

Concession VI, Lot 9. The following is taken from Satterly (1942, p. 26, 27):

Operations on lot 9, concession VI, Cowper township, were carried out between 1902 and 1904 by the Consolidated Copper Company of Parry Sound, Limited. The main shaft was reported to be 150 feet deep in 1903. Two other shafts are reported, and the mineralized zone was stated to be 18 feet in width and to dip 45°S.E.

The main shaft is 15 feet above the level of Cowper [Spider] lake. The rock on the dump is a garnet-rich to quartz-rich biotite gneiss with an erratic mineralization of disseminated chalcopyrite and pyrrhotite. The ridges north of the shaft expose numerous rusty patches in the garnet-biotite gneiss, which contains pegmatite and bands of amphibolite. These rusty patches sometimes are not sulphide-bearing, the staining coming from the garnets. The sulphides are pyrite, pyrrhotite, and very rarely chalcopyrite. Some magnetite was seen.

On a point in Cowper [Spider] lake just south of the shaft some shallow test-pitting has been done on a garnet-biotite gneiss and pegmatite carrying minor amounts of pyrite, pyrrhotite, and chalcopyrite.

Foley Township

Concession II, Lot 14. Two pits were put down in 1925 on lot 14, concession II, Foley township. The pit 5 chains south of the farmhouse exposes hornblende gneiss mineralized with disseminated chalcopyrite, pyrite, pyrrhotite, and magnetite. A 4-pound grab sample taken by the writer assayed 0.32 percent copper. The second pit, 26 chains south of the farmhouse, is sunk in a black, fine-to medium-grained amphibolite and is mineralized with disseminated pyrrhotite and chalcopyrite accompanied by garnets. A 6-pound grab sample taken by the writer contained 0.26 percent copper on assay. (Satterly 1942, p. 27)

Concession III, Lot 10, Southern Part. In the southern part of lot 10, concession III, Foley township, a small pit has been put down in a hornblende gneiss and white hornblende pegmatite and glassy, in part rusty, quartz carrying a few cubes of pyrite. (Satterly 1942, p. 27).

Concession III, Lot 10, Northern Part. A pit has been sunk on a rusty zone in streaky hornblende gneiss in the northern part of lot 10, concession III, Foley township. No sulphides were found. (Satterly 1942, p. 27)

Concession IV, Lot 12. A 4-foot drainage ditch in a field in lot 12, concession IV, Foley township, exposes hornblende gneiss containing stringers and irregular bands of quartz-rich white pegmatite slightly mineralized with pyrite, chalcopyrite, and pyrrhotite. (Satterly 1942, p. 27)

Concession IV, Lot 13. A drainage ditch in lot 13, concession IV, Foley township, exposes biotite gneiss and quartz-rich garnet-biotite gneiss carrying very minor amounts of chalcopyrite, pyrite, and pyrrhotite. (Satterly 1942, p. 27)

Concession IV, Lot 15. On lot 15, concession IV, Foley township, a pit 10 feet long, 4 feet wide, and from 3 to 5 feet deep, has been put down in a garnet-hornblende gneiss striking N.15°E. The gneiss dips 57°W., where it is cut by a 5- to 8-inch vuggy, white to grey quartz vein carrying coarse pyrite. The vein has an exposed length of 5 feet. Seams of chalcopyrite, pyrrhotite, and pyrite occur in minute fractures in the hornblende gneiss. Grab samples of the quartz and the mineralized gneiss gave no gold values on assay. (Satterly 1942, p. 27, 28)

Concession V, Lot 33. The work on the old Big Four property, lot 33, concession V, Foley township, consists of two pits, sunk in 1899, 7 chains north of the end of the portage at Three-Legged lake. One of the pits is 4 by 4 feet and 4 feet deep. These pits expose hornblende gneiss, bluish quartz-rich pegmatite, and glassy quartz. The quartz is vuggy and carried much pyrite and, rarely, a little chalcopyrite. A grab sample of this quartz taken by the writer showed no gold values on assay. (Satterly 1942, p. 28)

Concession VI, Lot 23. Near Otter lake on lot 23, concession VI, Foley township, a pit, 25 by 10 feet and 10 feet deep, was put down in 1901 through clay drift to bedrock. The rock on the dump consists of grey biotite granite gneiss, white biotite-poor granite gneiss, and hornblende gneiss. No mineralization was found. (Satterly 1942, p. 28)

Concession VI, Lot 33. The shaft of the old Mountain mine is situated at the base of a 30-foot cliff, 20 feet above McCoy lake, [unnamed on Map 2118] in lot 33, concession VI, Foley township. No quartz vein can be seen in the hornblende gneiss at the mouth of the shaft, but on the dump quartz-hornblende vein material as much as 6 inches in width, is sparsely mineralized with chalcopyrite, bornite, and, rarely, magnetite. (Satterly 1942, p. 28)

Concession VII, Lot 25. The following is taken from Satterly (1942, p. 28):

The 4- by 6-foot shaft of the old McDonald mine in lot 25, concession VII, Foley township, was worked in 1898 and 1899 and is reported to be 106 feet deep. The country rock in the vicinity of the shaft is a hornblende gneiss containing three pink granitized zones, two of which are 4 inches wide and the other 5 inches, which carry disseminated chalcopyrite, some bornite, and secondary malachite. A grab sample of the sulphide-bearing material taken by the writer showed no gold values when assayed.

A pit, 10 by 10 feet and from 3 to 4 feet deep, now overgrown with bushes, is located on the south shore of McDonald lake [unnamed on Map 2118] on lot 25, concession VII, Foley township. The rock exposed is a granite gneiss containing bands of hornblende gneiss. Rarely, a little chalcopyrite fills fractures in the granite gneiss.

Concession VII, Lot 26. The following is taken from Satterly (1942, p. 28):

A shaft, 8 by 14 feet and reported to be 55 feet deep, was sunk in 1901 two chains east of the road on lot 26, concession VII, Foley township. The rock is a hornblende gneiss containing many minute stringers of pegmatite and cut by a 2-foot dike of pink pegmatite in the shaft. Copper minerals were reported found here, but none was seen on the dump.

A shaft, 10 by 10 feet and reported to be 60 feet deep, was sunk in 1909 nine chains west of the road on lot 26, concession VII, Foley township. The rock is a hornblende gneiss containing stringers and dikes of pink to white biotite pegmatite. Some of the hornblende gneiss shows finely disseminated pyrrhotite and, rarely chalcopyrite. A little chalcopyrite also occurs as seams filling minute fractures in the pegmatite.

Concession IX, Lot 15. The following is taken from Satterly (1942, p. 29):

The old Vankoughnet mine on lot 15, concession IX, Foley township, was opened in 1899, and a shaft 5 by 7 feet was sunk 37 feet. Two large dumps will be referred to as the east and west dumps. There is a shallow test pit 2 chains southwest of the shaft.

The country rock is hornblende gneiss and hornblende pegmatite. The east dump shows hornblende gneiss containing bands of hornblende pegmatite sparsely mineralized with bornite and chalcopyrite. The west dump consists of pale-pink granite gneiss, some pink pegmatite, and grey and white biotite-hornblende granite gneiss.

Concession IX, Lot 35. The following is taken from Satterly (1942, p. 29):

The old Lafex mine in lot 35, concession IX, Foley township, was operated between 1897 and 1899. The development consists of a 10- by 10-foot shaft 65 feet deep, with 20 feet of drifting to the west. At 25 feet west of the shaft there is a 10- by 10-foot pit. These workings are near the top of a high hill.

The shaft is sunk on a rusty-stained hornblende gneiss. Material on the dump shows a rusty-weathering, coarse, grey pegmatite heavily mineralized with pyrrhotite, a little chalcopyrite, and pyrite in fractures. The hornblende gneiss shows a similar mineralization adjacent to the pegmatite. A grab sample of the mineralized pegmatite taken by the writer assayed 0.13 percent copper and no gold.

On the northeast wall of the pit 25 feet to the west there is exposed silicified rock from 2 to 4 feet in width mineralized with pyrrhotite. A grab sample taken by the writer showed no gold on assay. This mineralized pegmatite trends N.30°E., dips 65°S.E., and is exposed on the surface at 60 and 105 feet from this pit where it is 6 and 12 inches wide, respectively. A rusty zone, which includes the pegmatite, is 5 feet in width.

Parry Sound–Huntsville area

Concession X, Lot 15. A pit, 10 by 10 feet and 5 feet deep, has been sunk in hornblende gneiss on lot 15, 13 chains south of the road on the line between concessions X and XI, Foley township. Very little mineralization was observed. Rarely, disseminated pyrrhotite and chalcopyrite occur in hornblende pegmatite stringers or on joint surfaces. (Satterly 1942, p. 29)

Concession X, Lot 19. The development on lot 19, concession X, Foley township, consists of a 5- by 5-foot shaft 1 chain south of the concession road and a test pit at the road, 10 by 10 feet and 5 feet deep. The rock on the dump and the outcrop around the shaft is silicified granite gneiss, pegmatite, and hornblende pegmatite carrying a very minor amount of disseminated pyrrhotite, chalcopyrite, and pyrite. The test pit exposes a lens of coarse (1-inch) hornblende pegmatite mineralized with disseminated pyrrhotite and chalcopyrite. (Satterly 1942, p. 29)

Concession XI, Lot 13. On lot 13, concession XI, Foley township, a shaft, reported to be 90 feet deep and now almost filled with waste rock, has been sunk in amphibolite and garnet amphibolite carrying a little quartz. Some of the glassy white quartz shows a few splashes of chalcopyrite. (Satterly 1942, p. 29)

Concession XI, Lot 15. On lot 15, concession XI, Foley township, a shallow pit, now completely overgrown, has been put down in hornblende gneiss containing bands of coarse, white pegmatite. No mineralization was found. (Satterly 1942, p. 30)

Concession XI, Lot 16. On lot 16, concession XI, Foley township, a pit, 6 by 8 feet and 4 feet deep, is located 13 chains north of the concession road and 1 chain west of the boundary between lots 15 and 16. The rock is a hornblende gneiss cut by hornblende pegmatite carrying purplish quartz. Little mineralization was seen in the pegmatite, but the hornblende gneiss is locally mineralized with finely disseminated pyrrhotite and chalcopyrite. (Satterly 1942, p. 30)

Concession XI, Lot 17. On lot 17, concession XI, Foley township, a shaft, 8 by 9 feet and reported to be 40 feet deep, has been sunk 7 chains north of the concession road in granitized hornblende gneiss with *lit par lit* hornblende pegmatite. A little chalcopyrite in glassy white quartz was found on the dump. (Satterly 1942, p. 30)

Concession XI, Lot 27. On lot 27, concession XI, Foley township, a test pit, measuring 10 by 10 feet and 10 feet deep, has been sunk in amphibolite. The pit is on a hill just northeast of some old farm buildings. Rock on the dump indicates that bornite and chalcopyrite occurred in a coarse pegmatite dikelet and in amphibolite wallrock.

Concession A, Lot 137B. The old Burns shaft, 10 by 10 feet and reported to be over 100 feet deep, is situated just northeast of the Canadian Pacific railway track on lot 137B, concession A, Foley township. It is understood that the work was carried out in 1898-99. At the shaft a 4- to 8-inch band of coarse hornblende pegmatite trending N.15°W. and dipping 75°W., cuts hornblende gneiss. At the contacts of the band a little bornite, chalcocite, and chalcopyrite were seen. Rock on the dump indicates that pink pegmatite and a siliceous granite gneiss were encountered in the shaft. In the latter chalcopyrite is present in very minor amount filling fractures. (Satterly 1942, p. 30)

Concession A, Lot 145. On lot 145, concession A, Foley township, a small pit on the side of a hill just south of No. 69 highway exposes a hornblende-rich pegmatite cutting hornblende gneiss. Associated with large hornblende crystals in the pegmatite are a few grains of bornite and chalcocite. (Satterly 1942, p. 30)

Concession B, Lot 123. The following is taken from Satterly (1942, p. 30):

On lot 123, concession B, Foley township, an 8- by 10-foot shaft, reported to be 18 feet deep, was sunk in 1930 on a banded silicified hornblende gneiss striking N.20°W. and dipping vertically. No vein or mineralized zone is present in the outcrop adjacent to the shaft, but rock on the dump shows some disseminated pyrrhotite in quartz stringers.

On the same lot a ditch on the south side of the Canadian National railway exposes hornblende gneiss containing quartz stringers carrying pyrite and chalcopyrite. There is one vuggy grey quartz vein, 3 feet in width, carrying coarse pyrite and coarse pink calcite.

Concession B, Lot 145. On a point jutting westward at the east end of [McGowan][1] Lake in lot 145, concession B, Foley township, a shallow pit has been put down in a folded complex of hornblende gneiss and granite gneiss. A few grains of chalcopyrite were observed in the hornblende gneiss. Another pit has been sunk just to the east in a pink pegmatite cutting hornblende gneiss. No sulphide mineralization was seen. (Satterly 1942, p. 31)

[1]McGowan is the spelling now approved for this lake by the Canadian Permanent Committee on Geographic Names.

McGown Mine

The McGown mine is in lot 146, concession B, Foley township, on the north side of Highway 69, just southeast of the Parry Sound bypass. The mine was discovered by Thomas McGown in 1894 and operated as a gold mine (Coleman 1894, p. 98-100). The mine was acquired in 1897 by the McGown Gold Mining Company of Parry Sound Limited (Slaght 1898, p. 88). In 1898 the mine was taken over by the Parry Sound Copper Mining Company (Coleman 1899, p. 259). The mine was worked until 1908, when it became inactive for many years. In 1951 the property was re-examined, and four holes, totalling 409 feet, were drilled by Ventures Limited. From 1957 to 1961 the property was owned by Kalbrook Mining Company Limited. In 1959, Ventures Limited drilled 5 holes totalling 1,649 feet and did some surface mapping. In 1964 the property was optioned from Falconbridge Nickel Mines Limited by R. M. Clarke Mining Company. Considerable surface work was done in 1964; one shaft and two open pits were dewatered. A test shipment of bornite and chalcocite ore was made in September 1964.

A sketch map of the property showing the location of the main workings and the 1959 drilling is given in Figure 4; the company mine map was supplied by Falconbridge Nickel Mines Limited. The initial work was an open cut and adit trending N70°E between McGowan Lake and a small lake to the northwest (Slaght 1895, p. 265). The vein was exposed over a length of more than 100 feet along a strike of N70E, and dips 40° to 50° south. Coleman (1894, p. 98-100) reported that gold occurred as small nuggets and seals in vitreous quartz in association with bornite and chalcocite. The "vein" consisted of a series of fractures or shears in hornblende gneiss carrying quartz stringers with both the quartz stringers and country rock mineralized with gold, bornite, and chalcocite. The mineralized zone is described as being three feet wide.

An inclined shaft was reported to have been put down at the east end of the open cut in 1897, and after having reached a depth of 160 feet it was abandoned in 1900 (Slaght 1898, p. 88) (De Kalb 1901, p. 120). A shaft at the east end of this open cut was being dewatered in September 1964 when visited by the author. The shaft was vertical to the depth of dewatering, about 60 feet.

A vertical shaft, 300 feet east of the first shaft, was started in 1898 and reached a depth of 238 feet, with a level at 160 feet and crosscuts 25 feet to the north-northeast and 30 feet to the south-southwest (De Kalb 1901, p. 120). This shaft has been filled with bulldozed material from the dump. Three hundred and fifty feet southeast of this shaft there is an open cut, 60 by 25 feet and over 20 feet deep, beside the shore of McGowan Lake. Coleman (1899, p. 259-60) reported that this open pit produced rich bornite ore in bunches and impregnations in the hornblende gneiss. At the west end of the open cut a shaft was sunk to a depth of 33 feet (De Kalb 1901, p. 120).

About 150 feet north of the open cut another vertical shaft has been sunk to a depth of 87 feet with a level at 77 feet and a crosscut to the south of 131 feet. A 3-foot bornite vein is reported to have been cut in the crosscut at 70 feet (Carter 1903, p. 116). Drifting on the vein was carried out 12 feet to the northeast and 10 feet to the southwest. This shaft has been filled in with bulldozed material from the dump. Some further underground work was done in 1907 (O.D.M. 1908, p. 47) and 1908 (O.D.M. 1909, p. 50).

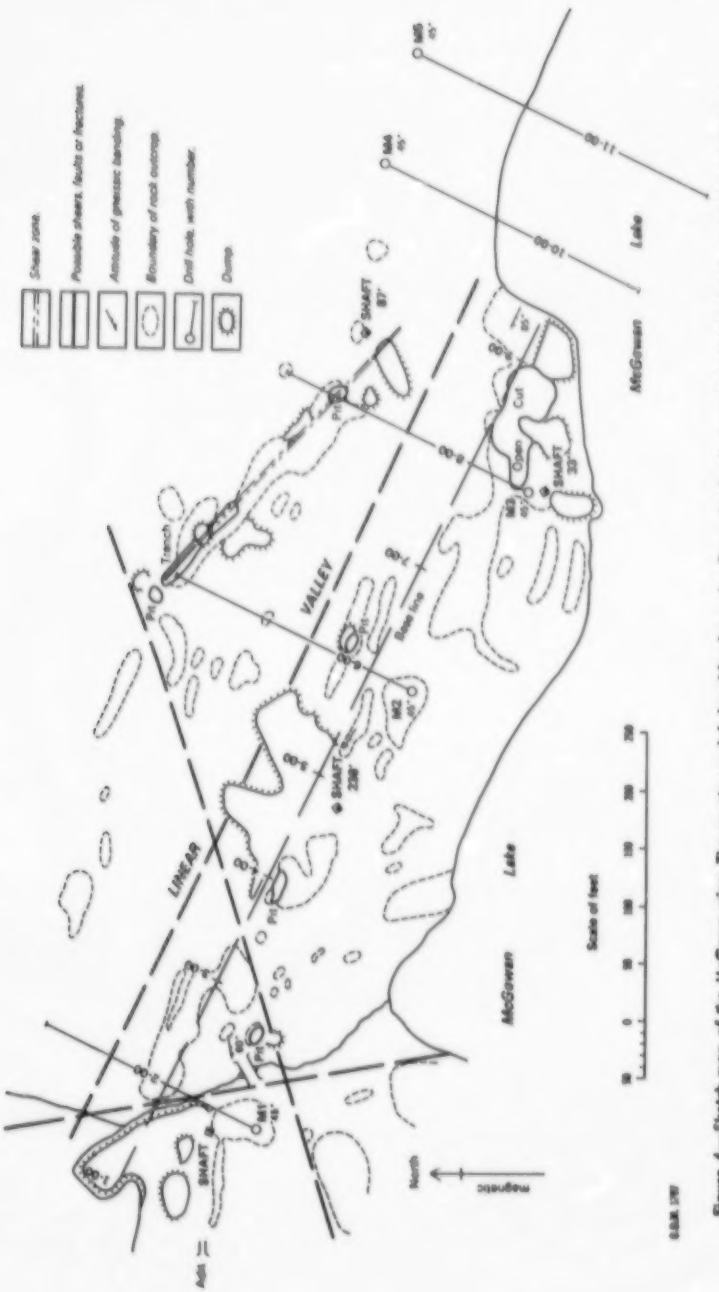


Figure 4—Sketch map of the McGowan mine. The country rock is hornblende gneiss. Reproduction by permission of Falconbridge Nickel Mines Ltd.

Production of six carloads of ore weighing 143 tons was reported in June 1899. The shipment ran 15.68 percent copper (Coleman 1899, p. 260). A shipment in July of the same year contained about the same percentage of copper, plus $5 per ton for gold and a little less than an ounce of silver.

The country rock on the McGown property is a medium-grained to coarse-grained amphibolite or biotite amphibolite gneiss grading to gneissic metagabbro, which is scapolitized in places. The gneissic structure strikes N70°E at the west end of the property and swings to N70°W at the east end of the workings. Dips are steeply to the south from 70° to 85°. The hornblende gneiss is cut by narrow dikelets of granite pegmatite and aplite. A linear valley runs through the property striking N70°W. This structure was tested by five diamond-drillholes in 1959, but little mineralization was indicated. The best values were 2.48 percent copper over 5 feet in a hole near the original discovery-pit.

Scattered bornite-chalcocite mineralization may be seen in several test pits on the property. Bornite and chalcocite are disseminated somewhat irregularly in the hornblende gneiss. Although outcrops are abundant, it is difficult to discern any regular structure or pattern to which the mineralization is related. At the west end of the property in the discovery-pit, the structure of the mineralized sheared zone strikes N70°E and dips south. Flat mineralized fractures appear to extend out into the wallrock in places.

Satterly (1942, p. 32) describes the mineralization as follows:

> Little mineralized rock can now be seen in place, but a study of material on the dumps shows a copper mineralization of two types: (1) as disseminated chalcocite and bornite in very glassy, white to bluish-grey quartz vein material with specks of ferromagnesian minerals, and (2) disseminations, lenses, or masses of chalcocite and bornite accompanied by red garnet, epidote, and altered hornblende in silicified hornblende gneiss with quartz or pegmatite stringers. Masses of solid sulphides apparently occurred to a small extent, as in the open cut at [McGowan] lake. Type (1) mineralization apparently came from a series of parallel narrow quartz veins occurring across a width of 3 feet in the trench between the two lakes. A grab sample taken by the writer of this material ran 0.09 ounces of gold per ton. Quartz vein material also occurred in a series of trenches and shaft north of a valley.

This mineralization is shown in Figure 4.

McDougall Township

Concession I, Lot 18. A pit 10 by 10 feet and 10 feet deep was put down in 1899 two chains south of the road and 2 chains west of a pond on lot 18, concession I, McDougall township. The rock is a medium-grained, dark-green feldspar amphibolite containing irregular areas of coarse hornblende aggregate, cut by a few pegmatite stringers. Magnetite is present in the amphibolite. In the coarse hornblende aggregate a few scattered grains of bornite and chalcopyrite were found, and disseminated chalcopyrite was seen on a joint face. (Satterly 1942, p. 33)

Concession XII, Lot 13. An open cut on the south slope of a hill, 5¼ chains north of a lake in lot 13, concession XII, McDougall township, exposes garnet-hornblende gneiss striking N.30°W. and dipping 47°E. Interbanded with the gneiss is a deeply weathered mineralized zone. It consists of bands of glassy, rusty quartz containing seams of pyrite, chalcopyrite, and pyrrhotite filling fractures parallel to the strike. A grab sample of this material taken by the writer gave no gold values on assay. To the east is a 1- to 3-foot band of greenish sheared rock heavily mineralized with dark sphalerite and containing some chalcopyrite and, rarely, galena. A grab sample of this aggregate taken by the writer also gave no gold values on assay. The hanging wall of the sphalerite band is a band of sugary garnet-biotite gneiss. The mineralized zone pinches out to the northwest and is probably only a small lens. (Satterly 1942, p. 33)

Monteith Township

Concession IX, Lot 19. A pit, 10 by 10 feet and 4 feet deep, has been put down on a pink, medium-grained hornblende granite gneiss sparsely mineralized with lenticular stringers and disseminations of chalcopyrite. (Satterly 1942, p. 33)

DIATOMITE

The following descriptions under this heading, Diatomite (pages 34 to 44), are by G. R. Guillet[1].

Diatomite is fairly widespread in the Muskoka area. In most places it is intimately associated with peat, and usually it is further contaminated with small amounts of clay or silt. Attempts to produce commercial diatomite products have been short-lived because of the impurities and small size of the deposits.

The siliceous skeletal remains of certain algae, called diatoms, have been accumulating (only since the retreat of the glacial ice some 10,000 years ago) in many swamps and lakes of the Muskoka area. Deposits, therefore, are not thick. In a few places, layers of impure olive-grey diatomite 1 to 3 feet thick are found resting on humified peat, clay, silt, or sand. More frequent, however, are deposits of brown diatomaceous peat or muck occurring in thicknesses of 5 to 15 feet. Diatomite may constitute 50 to 70 percent of the dried material in the former case, and 10 to 20 percent in the latter.

The fine cellular structure of the diatom makes diatomite well-suited for filtration and insulation purposes. Ideally, the individual diatom skeletons should be unbroken. Much of the material in many of the Muskoka deposits is well-preserved, but some fragmentation inevitably occurs during handling and beneficiation. Diatomaceous material from fresh-water lakes and swamps must be calcined to remove peaty organic impurities, and air-separated to reduce the content of silt and sand.

Diatoms common to the Muskoka area are predominantly elongated elliptical types. V. L. Eardley-Wilmot (1928, frontispiece) illustrates the ones most common to Canadian deposits. The author recognized the following species in the Muskoka deposits:

Pinnularia major
Stauroneis phoenicenteron
Tabellaria fenestrata
Diploneis elliptica
Eunotia robusta decadon
Eunotia robusta tetradon
Eunotia bidentula
Eunotia pectinalis ventricosa
Eunotia biceps
Eunotia major
Gomphonema acuminatum capitatum
Gomphonema capitatum
Surirella robusta
Navicula semen
Melosira granulata
Neidium tumescens
Neidium iridis
Anomaeoneis serians
Anomaeoneis follis
Cymbella ventricosa
Cymbella cuspidata

[1]Geologist, Industrial Minerals, Ontario Department of Mines, Toronto.

Table 8 | *Commercial production of diatomite in Ontario (Statistician, Ontario Dept. Mines)*

YEAR	TONS	VALUE	YEAR	TONS	VALUE
1930	10	$ 140	1935	100	4,600
1931	60	840	1936	40	2,000
1932	10	309	1937	38	1,868
1933	28	1,298	1939	5	280
1934	46	1,920	1953	100	12,000

Diatomite has been reported from the Muskoka area at the following locations:

DISTRICT OF MUSKOKA

Brunel township, concession VIII, lots 15, 16.
Chaffey township, concession IV, lots 25, 26.
Chaffey township, concession IX, lot 19.
Chaffey township, concession X, lot 18.
Chaffey township, concession X, lots 19, 20.
Draper township, concession X, lots 3, 4.
Macaulay township, concession VI, lot 30.
McLean township, concession III, lot 32.
McLean township, concession IV, lot 21.
McLean township, concession V, lot 15.
McLean township, concession V, lot 21.
McLean township, concession VI, lot 14.
McLean township, concession VII, lot 27.
Medora township, concession D, lot 11.
Medora township, concession IV, lot 19.
Oakley township, concession XI, lot 30.
Ridout township, concession VIII, lots 28, 29.
Stephenson township, concession XIII, XIV, lots 23 to 26.
Stisted township, concession I, II, lots 22, 23.
Stisted township, concession II, lots 25, 26.
Stisted township, concession VIII, lots 7 to 10.
Stisted township, concession IX, lot 10.
Stisted township, concession XI, lot 19.

DISTRICT OF PARRY SOUND

Perry township, concession I, lot 3.

DISTRICT OF MUSKOKA

Brunel Township

Concession VIII, lots 15, 16. A shallow swamp known as the Broadbent property in lots 15 and 16, concession VIII, Brunel township, was sampled by William Douglas in 1929. A 5-foot thickness of diatomaceous peat occurs in a 10-acre area in the south half of lot 16. Evaluation of a calcined sample by Thomas Heys and Sons, analytical chemists, indicated a white and fluffy product consisting mainly of unbroken diatoms of the *Pinnularia* type. The chemical analysis of the product is given in Table 9.

Table 9 — *Analysis of diatomaceous peat, Brunel twp., con. VII, lots 15, 16 (Bruce Douglas, personal communication)*

	percent		percent
SiO_2	80.40	MgO	0.43
Al_2O_3	16.42	Alkalis	1.05
Fe_2O_3	0.28	L.O.I.	0.82
CaO	0.60		100.00

Chaffey Township

Concession IV, lots 25, 26. A small deposit of diatomaceous peat, known as the Law deposit, lies across the boundary of lots 25 and 26, concession IV, Chaffey township. It was sampled by W. J. Douglas in 1929. According to Bruce Douglas (personal communication) the deposit covers 5½ acres, has a maximum depth of 11 feet, and averages 11.59 percent of diatomite. A sample evaluation by Thomas Heys and Sons, analytical chemists, indicates that the calcined diatomite is cream-coloured and consists mainly of broken *Eunotia* diatoms. The analysis of the calcined product is given in Table 10.

Table 10 — *Analysis of diatomaceous peat, Chaffey twp., con. IV, lots, 25, 26 (Bruce Douglas, personal communication)*

	percent		percent
SiO_2	84.36	CaO	0.82
Al_2O_3	10.03	MgO	0.54
Fe_2O_3	0.45	Alkalis	1.92
MnO_2	trace	L.O.I.	1.88
			100.00

Concession IX, lot 19. A 14-acre swamp known as the Yearley property is situated in lot 19, concession IX, Chaffey township. It was sampled in 1929 by W. J. Douglas, who reported (Bruce Douglas, personal communication) that more than 20 feet of diatomaceous peat was present over much of the area. An evaluation by Thomas Heys and Sons, analytical chemists, showed the calcined product to be light-brown in colour and to consist mainly of *Pinnularia* diatom fragments. The analysis of the product is given in Table 11.

Table 11 — *Analysis of diatomaceous peat, Chaffey twp., con. IX, lot 19 (Bruce Douglas, personal communication)*

	percent		percent
SiO_2	77.82	MgO	0.79
Al_2O_3	12.13	Alkalis	2.95
Fe_2O_3	1.37	L.O.I.	2.06
CaO	2.88		100.00

Concession X, lot 18. Eardley-Wilmot (1928, p. 78) gives the following description of an occurrence in lot 18, concession X, Chaffey township:

> On Harry Southby's land, locally known as the Beaver meadows, about 50 acres of swampy ground are covered with long grass and a few alders. The swamp contains 4 to 6 feet of dark brown diatomaceous peat underlain by silt or sand. The dry peat is self-calcining, leaving a pink and gritty residue containing diatoms and sponge spicules.

Analyses by the Mines Branch, Ottawa, (Canada Dept. Mines, Energy and Resources) of the dried raw and calcined diatomite from this occurrence are given in Table 12.

Table 12 — *Analyses of raw and calcined diatomite, Chaffey twp., con. X, lot 18 (Eardley-Wilmot 1928, p. 97)*

	RAW	CALCINED
	percent	percent
SiO_2	52.10	76.64
Al_2O_3	11.44	14.34
Fe_2O_3	2.46	2.76
CaO	2.16	2.71
MgO	1.00	1.31
L.O.I.	27.50	0.66
	96.66	98.42

Concession X, Lots 19, 20. In 1929, W. J. Douglas produced a small amount of diatomite from a marsh on the boundary between lots 19 and 20, concession X, Chaffey township. The deposit, known as the Tynan, consists of an olive-grey diatomite bed 1 to 3 feet thick covering an area of about 3 acres. A sample of the calcined product provided by Bruce Douglas is creamy-white and consists largely of broken *Pinnularia* and *Eunotia* diatoms. Eardley-Wilmot (1928, p. 77) gives the following description of the diatomite:

> The material is in places mixed with sand and covered with peat and vegetable matter, but in some places comparatively clean though somewhat gritty material may be obtained. The deposit contains well-formed, unbroken diatoms but is high in alumina.

Analyses of the raw and calcined diatomite are given in Table 13.

Table 13 — *Analyses of raw and calcined diatomite, Chaffey twp., con. X, lots 19, 20.*

	RAW (Analysis by Mines Branch, Ottawa; from Eardley-Wilmot 1928, p. 97)	CALCINED (Analysis by T. Heys and Sons 1929; from Bruce Douglas, personal communication)
	percent	percent
SiO_2	70.60	89.50
Al_2O_3	12.73	8.41
Fe_2O_3	2.67	0.25
CaO	1.65	0.60
MgO	1.00	0.38
L.O.I.	8.20	0.80
	96.85	99.94

Parry Sound–Huntsville area

Draper Township

Concession X, Lots 3, 4. Eardley-Wilmot (1928, p. 78) describes an occurrence in Spence Lake, 3 miles south of Bracebridge, in lots 3 and 4, concession X, Draper township:

> Diatomite occurs on the west end of Spence lake some 2 miles east of Muskoka Falls [not shown on Map 2118] and 5 miles south of Bracebridge. Swampy meadows about a quarter of a mile wide and half a mile long extend on either side of the outlet. A small area of grey-white diatomite which in places is 18 inches thick, but averages 1 foot, and is underlain by blue-grey silt, is exposed in the banks and bed of the creek. This deposit contains about 200 tons of the only natural white diatomite so far found in this locality. However, a considerable area of grey-brown mud occurs, which in places varies from 6 to 10 feet in thickness. The calcined mud is pure white in colour and consists almost entirely of well-preserved rod and ovalshaped diatoms. When calcined it appears to be of better quality than the burnt white material which assumes a slightly pink tinge. . . . The diatom structure is such that it should be suitable for all purposes including sugar refining. Recent power developments by the Ontario Hydro-Electric Company have flooded this area, so that the deposit can not be drained and the material can now be recovered only by dredging.

Analyses by the Mines Branch, Ottawa, (Canada Dept. Energy, Mines, and Resources) are given in Table 14.

Table 14 — *Analyses of diatomite, Draper twp. con. X, lots 3, 4 (Eardley-Wilmot 1928, p. 97)*

	CRUDE MUD	CALCINED MUD	CRUDE WHITE DIATOMITE
	percent	percent	percent
SiO_2	70.00	87.46	79.90
Al_2O_3	4.56	6.94	6.64
Fe_2O_3	1.30	1.46	1.30
CaO	0.73	1.88	0.85
MgO	0.56	0.91	0.56
L.O.I.	22.40	1.60	9.88
	99.55	100.25	99.13

According to J. Satterly (1943, p. 25) a trial shipment of 10 tons of crude diatomite, probably from this deposit, was made by R. Morrow in 1930. The property was subsequently acquired by Spence Lake Diatomite Limited, and in 1935 by Air-Lite Silica Company Limited, but no work is recorded by either company.

Macaulay Township

Concession VI, Lot 30. Satterly (1943, p. 25, 26) describes an occurrence as follows:

> A diatomite deposit on the farm of D. Vanclieaf, lot 30, concession VI, Macaulay township, was leased by G. Bailey in 1931. Mr. Bailey shipped 60 tons of crude diatomite to his fire and insulating brick plant at Brampton in 1931. Eardley-Wilmot . . . reported that the diatomite was of a good grade near the top of the deposit, but that there was only a limited amount, about 200 tons, of the better grade being found at depths between 6 inches and 2½ feet. The deposit was thicker in the centre, where a depth of 17 feet was reached, but the lower part was not of the highest-grade material.

In 1964 the author sampled the bed of a grassy marsh at the north end of a small lake, ¼ mile south of Highway 118, in lot 30, concession VI, Macaulay

township. The lake and adjoining marsh occupy about 50 acres in a depression between ridges of granite. Using a peat sampler, the bed of the marsh was tested near its centre, about 200 feet north of the lake. Seven feet of dark brown partly humidified peat containing only an occasional diatom was found beneath 1 foot of water. Below the dark-brown peat is a 3-foot layer of well-humidified olive-green peat containing scattered mica flakes and a moderate number of rod and elliptical diatoms, largely unbroken; nine diatom varieties were identified, with *Eunotia* and *Pinnularia* being the most common types. The diatomaceous layer is underlain by medium to coarse-grained sand. This occurrence is apparently not the same one referred to by J. Satterly.

McLean Township

Concession III, Lot 32. An occurrence known as the Brown deposit is reported in lot 32, concession III, McLean township (Satterly 1943, p. 24). According to H. P. H. Brumell (personal communication with J. Satterly, 1943) the deposit contains 13,000 tons of material grading 35 percent diatomite.

Concession IV, Lot 21. An occurrence known as the Ryckman deposit is situated along the banks of the Muskoka River in lot 21, concession IV, McLean township (Satterly 1943, p. 24). According to H. P. H. Brumell (personal communication with J. Satterly, 1943) the deposit contains 4,000 tons of 35 percent diatomite. V. L. Eardley-Wilmot (personal communication with J. Satterly, 1943) states that the deposit is gritty and small.

Concession V, Lot 15. An occurrence known as the Heney deposit is reported in lot 15, concession V, McLean township (Satterly 1943, p. 24). H. P. H. Brumell (personal communication with J. Satterly, 1943) reports that the deposit occupies 7 acres and contains an estimated 6,850 tons of 17 percent diatomite.

Concession V, Lot 21. A small diatomite marsh known as the Bailey deposit is situated near the Muskoka River in lot 21, concession V, McLean township. According to V. L. Eardley-Wilmot (personal communication with J. Satterly, 1943) the deposit is gritty and small except for a small patch of high quality diatomite.

Concession VI, Lot 14. An occurrence known as the White deposit is reported in lot 14, concession VI, McLean township (Satterly 1943, p. 24). According to H. P. H. Brumell (personal communication with J. Satterly, 1943) the deposit occupies about 7 acres and contains 6,000 tons grading 15 percent diatomite.

Concession VII, Lot 27. A diatomite marsh is situated on Outlet Creek in lot 27, concession VII, McLean township (Satterly 1943, p. 24). H. P. H. Brumell reports (personal communication with J. Satterly, 1943) that the deposit occupies about 50 acres and contains 17,000 tons grading 18 percent diatomite.

Medora Township

Concession D, Lot 11. V. L. Eardley-Wilmot (1928, p. 76) describes a small diatomite occurrence in lot 11, concession D, Medora township:

> Diatomite occurs on the farm of Albert H. Edwards, on the bottom of a small bay of the Moon River near its junction with the Muskoka River, 2 miles northwest of Bala. The deposit

extends over about half an acre and has a thickness of about one foot. It is covered with about one foot of mud and underlain by sand resting on blue clay. The diatomite is of a good white colour, but is badly contaminated with silt, only about 6 inches being fairly pure. It is quite high in silica but is also high in alumina. The diatoms are mainly rod-shaped, a type well suited for filtration purposes.

Eardley-Wilmot (1928, p. 97) reports that twenty-seven diatom varieties were identified from the deposit; he also gives in Table 15 analysis by the Mines Branch, Ottawa, (Canada Dept. Energy, Mines, and Resources) of the white calcined product.

Table 15 — *Analysis of diatomite, Medora twp., con. D, lot 11 (Eardley-Wilmot 1928)*

	percent		percent
SiO_2	86.80	CaO	2.63
Al_2O_3	14.00	MgO	0.70
Fe_2O_3	3.90	L.O.I.	8.78
			96.87

Concession IV, Lot 19. A diatomite occurrence in lot 19, concession IV, Medora township is described by V. L. Eardley-Wilmot (1928, p. 77) as follows:

On the bottom of a small bay of Lake Joseph near Glen Orchard, greyish brown diatomite covers about 10 acres to a depth of 3 to 5 feet. The material can be obtained only by dredging as the bay can not be drained. A few tons were dug many years ago and sold for polishing purposes by Thomas Orgill of Glen Orchard. The diatoms are quite clean and fairly well preserved.

Eardley-Wilmot (1928, p. 97) reports that thirty-one diatom varieties were identified from the deposit; he gives an analysis by the Mines Branch, Ottawa, (Canada Dept. Energy, Mines, and Resources) in Table 16.

Table 16 — *Analysis of diatomite, Medora twp., con. IV, lot 19 (Eardley-Wilmot 1928)*

	percent		percent
SiO_2	75.94	CaO	0.93
Al_2O_3	6.04	MgO	0.88
Fe_2O_3	1.10	L.O.I.	13.26
			98.15

Oakley Township

Concession XI, Lot 30. An occurrence known as the Crozier's Falls deposit is recorded by Satterly (1943, p. 24) in lot 30, concession XI, Oakley township. H. P. H. Brumell reports (personal communication with J. Satterly, 1943) that the deposit occupies 7½ acres and contains 20,000 tons of material grading about 50 percent diatomite.

Ridout Township

Concession VIII, Lots 38, 39. The diatomite occurrence which has been reported in this township is unknown to the author except as referred to in Satterly (1943, p. 24).

Stephenson Township

Concessions XIII and XIV, Lots 23 to 26. A shallow deposit of diatomaceous peat underlies the water of Siding Lake at Martins, lots 23 to 26, concessions XIII and XIV, Stephenson township. According to Satterly (1943, p. 26) the deposit was acquired by Diatomite Products Limited in 1929 from the Canadian Kieselguhr Company Limited. It was leased to Canadian Multi-Cell Limited in 1935. A filtering, calcining, air-separating, and bagging plant was built at the north end of the lake. Although Diatomite Products Limited commenced dredging in Siding Lake they shortly transferred operations to nearby Slocombe Lake[1]

The area of Siding Lake and the adjoining open marsh is 200 acres. Sampling by the author in 1964 revealed 2 to 3 feet of black diatomaceous muck resting on fine-grained brown sand and overlain by 5 feet of water. *Stauroneis phoenicenteron* is virtually the only diatom present except for a few rare rod-shaped ones; the diatoms are largely unbroken. The raw material is mainly composed of organic matter with minor amounts of silt and diatomite.

Stisted Township

Concessions I and II, Lots 22, 23. J. Satterly (1943, p. 26, 27) describes a deposit of diatomaceus muck as follows:

> A diatomite deposit underlies the waters of Slocombe lake in lots 22 and 23, concessions I and II, Stisted township, about 1½ miles northwest of Martin Siding [Martins] on the Canadian National railway. Martin Siding [Martins] is 5 miles southwest of Huntsville. This property, as well as Lee [Onawaw[1]] lake and Round [Siding[1]] lake, was first acquired by the Canadian Kieselguhr Company, Limited. In 1929 Diatomite Products, Limited, acquired the property, and in 1935 leased it to Canadian Multi-Cell Limited . . .
>
> From test shipments of crude diatomite by Diatomite Products Limited, in 1931, to the Mines Branch, Ottawa, it was reported that satisfactory products could be prepared by calcining, crushing, and separating the grit from the fine diatomite.

Onawaw Lake, unnamed on Map 2118, is at Lat. 45°23'N, Long. 79°03'W.

A dredge was erected in 1931 and the lake sludge was piped 1¼ miles to the Martin Siding plant. Between 1933 and 1937 a total of 2,320 tons of crude diatomite was treated, and sales of 220 tons of product, valued at $10,060, are recorded (Statistician, Ontario Dept. Mines).

Slocombe Lake occupies an area of 50 acres. It is deep and clear, and has low sandy shores. In 1964 the author sampled the lake bottom at several points near the south end. In shallow water near the shore 1 to 4 feet of brown fibrous peat carrying a few diatoms were encountered on a sandy bottom. In the south-central part of the lake, near the remains of cribbing that supported the suction dredge used in the 1930s, 12 feet of dark-brown diatomaceous muck was sampled beneath 12 feet of water; the muck bottom was not reached. Elliptical diatoms are common and largely unbroken. Much organic matter is present with minor silt.

Concession II, Lots 25, 26. A deposit of brown diatomaceous peat occupies the basin of Onawaw Lake in lots 25, 26, concession II, Stisted township. The lake is deep and clear, and covers an area of 38 acres. Extensive spruce marshes to the northwest and southeast may extend the deposit to 300 acres. The deposit was one of

[1]These are the official names now approved for these lakes by the Canadian Permanent Committee on Geographic Names.

the group of diatomite properties controlled by Diatomite Products Limited and Canadian Multi-Cell Limited in the 1930s, but no production is recorded. Access to the west side of Onawaw Lake is possible via lumber trails through the farm of F. Beecraft.

In 1964 the author sampled the deposit from the edge of the spruce marsh at the northwest end of the lake. Using a peat sampler, 9 feet of diatomaceous peat were recovered below 5 feet of fibrous organic material. Dense light-grey silty clay was encountered at a depth of 14 feet. The 9 feet of medium dark-brown, partly humified peat contains many unbroken diatoms of the *Eunotia* type. Organic material is common and silt is rare.

Concession VIII, Lots 7 to 10. A thin grey diatomite bed underlies a grass marsh along Black Creek (unnamed on Map 2118) in lots 7 to 10, concession VIII, Stisted township. Satterly (1942, p. 53) gives the following description for lots 7 and 8:

> Samples of diatomite were collected from a deposit of diatomite and clay underlying a swamp creek on lots 7 and 8, concession VIII, Stisted township, Muskoka district, southwest of Ashworth. Two samples were taken, one white, the other brown. A microscopic examination showed the presence of the diatoms, *Stauroneis phoenicenteron* and *Pinnularia major*, and much silty material in both samples. The swamp is 75 yards wide and about half a mile in length. Only grab samples were taken . . . The writer gained the impression in spading over the diatomite that it forms a thin layer and is too intimately associated with sand, silt, or clay to allow for a clean recovery if worked.

Lots 9 and 10, known as the O'Reilly property, were investigated by William J. Douglas in 1929. In 1964 the author sampled the deposit on the bank of Black Creek in lot 10. 1½ feet of medium-grey diatomaceous earth underlies a few inches of living organic matter. Both rod-shaped and elliptical diatoms are common, many unbroken. Silt and organic matter are the major impurities. A bed of dark-brown diatomaceous peat underlies the grey diatomite bed and overlies a medium-grained grey sand. Unbroken elliptical diatoms are present in the peaty layer, but organic material greatly predominates.

The area of open marsh adjacent to Black Creek in lots 7 to 10 inclusive is 75 acres. Analytical work on the grey diatomite bed by Thomas Heys and Sons in 1928 is given in Table 17.

Table 17 — *Results of analytical work on grey diatomite, Stisted twp., con. VIII, lots 7 to 10 (Bruce Douglas, personal communication)*

RAW MATERIAL	percent	MINERAL MATTER	percent
Moisture	41.49	SiO_2	75.80
Organic matter	12.39	Al_2O_3	14.07
Mineral matter	46.12	Fe_2O_3	2.23
	100.00	CaO	2.36
		MgO	0.70
		Alkalis and manganese	4.84
			100.00

Concession IX, Lot 10. A deposit of diatomite and clay underlying an adjoining swamp north of Black Creek, in lot 10, concession IX, Stisted township, is mentioned by Satterly (1942, p. 52). The author sampled the deposit at one point in

a thick spruce swamp in 1964 but found no diatoms in the 3 feet of peat overlying fine yellow sand. However, as it forms part of the Black Creek Drainage area, it is likely that diatomite is present in some places.

Concession XI, Lot 19. Eardley-Wilmot (1928, p. 78) describes an occurrence in Duck Lake[1], (unnamed on Map 2118) lot 19, concession XI, Stisted township:

> About 12 miles northwest of Huntsville, a diatomaceous peat, 2 to 15 feet in thickness, and covering about 50 acres, occurs on the north and west sides of Duck lake[1] on Hodge's farm. The swamp extends for some hundreds of feet back from the north edge of the lake and the dried peat is somewhat similar to that from Beaver meadows [Chaffey township], but contains less carbonaceous matter. The proportion of grit appears to increase with depth, but the best material occurs from 1 to 3 feet below the surface. The pink residue after calcining is gritty and high in alumina . . . The diatoms are well preserved.

Analyses by the Mines Branch, Ottawa, (Canada Dept. Mines, Energy and Resources) are given in Table 18.

Table 18 — *Analyses of diatomaceous peat, Stisted twp., con. XI, lot 19, (Eardley-Wilmot 1928, p. 97)*

	CRUDE PEAT	CALCINED MUD
	percent	percent
SiO_2	41.74	74.70
Al_2O_3	4.28	14.50
Fe_2O_3	1.46	2.76
CaO	0.80	2.33
MgO	0.50	1.22
L.O.I.	50.08	0.94
	98.86	96.45

The author sampled the deposit at the creek mouth at the northeast corner of Duck Lake[1] mentioned above in 1964. Two feet of sand underlies one foot of living organic matter. Beneath the sand, 5 feet of medium-brown diatomaceous peat is resting on fine-grained grey sand. Rod or cylindrical-shaped diatoms are particularly common, especially *Tabellaria fenestrata*. Eardley-Wilmot (1928, p. 97) has identified 16 individual species. Silt and organic material are common in the diatomaceous peat layer.

According to Satterly (1943, p. 28) the deposit was leased by The Canadian Diatomite and Silica Company, but no production is recorded.

DISTRICT OF PARRY SOUND

Perry Township

Concession I, Lot 3. The following description including the table is given by J. Satterly (1942, p. 53):

> A diatomite deposit occurs on lot 3, concession I, Perry township, west of Novar, in what is known as Austin swamp. Dominion Diatomite, Limited, was incorporated in August, 1931, to operate this deposit, and a small production was recorded for the years 1932-34. In 1933, Dominion Diatomite, Limited, was succeeded by F. P. Macklem. The property has been idle since 1934.

[1]Duck Lake is the local name and has not been approved by the Canadian Permanent Committee on Geographic names.

Table 19 *Diatomite production, Parry twp., con. I, lot 3 (Satterly 1942, p. 53)*

Year	Tons milled	Tons sold	Value
1932	134	10	$309
1933	96	8	438
1934	68	6	320

Satterly (1942, p. 53) continues:

An analysis of the diatomite was reported to show 84 percent silica, but it is not stated what amount of this was diatom silica. Microscopic inspection of the crude diatomite collected by the writer from the old drying racks shows a fair amount of grit, and it is suspected that a high-grade product could not be obtained without a considerable percentage of the inferior grades for which there is little sale.

The author examined the deposit in 1964. The mill building stands just north of the road running west from Novar, but all equipment has long since been removed. In a grass marsh 200 yards north of the mill there are four dredged areas, each 100 to 150 feet by 50 feet in size, from which diatomite has been removed. Sampling in an undisturbed area at the north end of the old workings revealed 2 feet of dense brown-grey diatomaceous earth beneath 2 feet of water. The diatomite bed overlies 2 feet of dark-brown silty peat resting on a floor of medium-grained sand. The area of the swamp in the immediate vicinity of the old workings is 50 acres, but other swamp areas on adjoining lots along the same watercourse might extend the deposit considerably.

Elongate diatoms, especially *Pinnularia major*, are particularly common in the grey diatomite and brown peaty beds. A large percentage of the diatoms are unbroken. Organic material and silt are the impurities.

Feldspar

Several pegmatite dikes were opened up for feldspar in the Muskoka and Parry Sound districts, mainly in the 1920s, but there has been no production of feldspar for many years owing to the lack of markets.

DISTRICT OF MUSKOKA

Brunel Township

Concession X, Lots 7, 8. A granite pegmatite dike was opened up in 1953 on lots 7 and 8, concession X, Brunel township. There was no production.

Concession XIV, Lot 16. About 100 feet above lake level at the ski jump on the west shore of Fairy lake, 1½ miles from Huntsville, old pits expose a pegmatite dike on lot 16, concession XIV, Brunel township, Muskoka district. In one pit pink microcline forms crystals as large as 1½ by 2 feet, and banded grey or white quartz and some small books of muscovite occur interstitially. At the mouth of this pit waste rock consists of a coarse-grained aggregate of pink microcline, yellow-brown plagioclase, quartz, muscovite, and biotite. On the dump partly stained muscovite is found in sheets as much as 3 inches in diameter, and biotite in crushed sheets as much as 2 feet in diameter. Other strippings near the top of the ski jump and much of the waste rock forming a talus slope on the side of [the] hill show abundant graphic granite. It would appear that the abundance of graphic granite prevents any commercial development. (Satterly 1942, p. 61)

Chaffey Township

Concession V, Lot 23. A 40-foot wide granite pegmatite dike was opened up on lot 23, concession V, Chaffey township by International Ceramic Mining Limited in 1948. The dike is on the south side of a hill, 1,250 feet from the nearest road. It strikes N80°W and cuts biotite paragneiss country rock. The dike shows pronounced zoning with a wall zone of graphic granite, an intermediate zone of potash feldspar and quartz, and a quartz core. Biotite crystals up to 6 feet in diameter are found in the intermediate zone. Minerals present in the dike are potash feldspar, soda feldspar, quartz, biotite, magnetite, graphic granite, sericite, and an unidentified radioactive mineral.

There was no production from the property.

Concession X, Lot 13. A 3 to 4-foot dike of granite pegmatite carrying muscovite has been stripped on lot 13, concession X, Chaffey township. The dike has been exposed in a trench 120 feet long and 10 to 20 feet wide. The country rock is biotite granite gneiss. The muscovite books average about 2 inches in diameter. Test shipments of mica and feldspar are reported.

Stephenson Township

Concession II, Lots 26 and 27. A car of feldspar is reported (O.D.M. 1916, p. 131) to have been shipped by S. W. Hall in 1915 from a dike on lots 26 and 27, concession II, Stephenson township.

Concession XIV, Lot 24. The following is taken from Satterly (1942, p. 61):

> At the time of the writer's visit in September, 1941, F. C. Hammond and Allan McKay were developing a feldspar property on lot 24, concession XIV, Stephenson township, Muskoka district, 1½ miles from Martins on the Canadian National railway. A stripping 25 by 50 feet had been cleared on a pegmatite dike on the north slope of a hill just south of the road on the boundary between Stephenson and Stisted townships. Work was in progress in a pit 25 feet square and from 3 to 5 feet deep to obtain a carload of feldspar for a test shipment to the Genesee Feldspar Company, Incorporated, Rochester, N.Y.
>
> The pegmatite dike, which is about 25 feet wide, is composed of pink microcline, graphic granite, glassy white or grey quartz, odd books of biotite with a maximum diameter of 3 inches, and some magnetite. A very small amount of plagioclase was seen on the west wall. Quartz forms a 10-foot width in the centre of the dike flanked by pink microcline with coarse grey quartz. The ratio of feldspar to waste in September, 1941, was reported to be very low, about 1 to 10.
>
> The dike cuts a biotite augen gneiss, which is also exposed in a low cliff 30 feet south of the stripping. The gneissic structure strikes N.65°W. and dips 45°S.W. There is no trace of the dike here, as would be expected, which suggests that the pegmatite body may be just a small mass.

DISTRICT OF PARRY SOUND

Christie Township

Concession VI, Lot 27. A small pegmatite dike composed mainly of graphic granite pegmatite carrying biotite was operated for feldspar in 1923 and in 1924 by Industrial Minerals Corporation of Canada. It is reported (Satterly 1942, p. 56) that 200 tons of spar was shipped. The mine is ½ mile southeast of what was formerly Beatty station on the Canadian National Railways abandoned line passing through Christie township. The pit is on the north shore of a small lake on lot 27, concession VI, Christie township. The workings are 15 by 20 feet by

15 feet deep. The dike is 15 feet wide, and consists of pink microcline, quartz, and biotite. Satterly (1942, p. 56) reports that the largest feldspar crystals on the pit walls measure 1 foot in diameter.

Conger Township

Concession VIII, Lot 5. The following is from Satterly (1942, p. 56):

> The [feldspar] deposit on lot 5, concession VIII, Conger township, is half a mile northwest by an old road from the Canadian Pacific railway. Here a water-filled pit, 10 by 10 feet and 4 feet deep, exposes a pegmatite dike composed of white and pink feldspars, biotite, and quartz. At the track beside a torn-up railway siding a very small dump consists of pink microcline . . . and white plagioclase . . .
>
> The Standard Feldspar and Silica Company worked this deposit in 1911-12, but there was no production . . .

Concession IX, Lot 4. The following is from Satterly (1942, p. 57):

> South of Brignall station [Sta. on Map 2118] and just west of the Canadian National railway, or 1 mile west by a poor road from No. 69 highway, a trench, now partly filled with water, was put down on a 12-foot pegmatite dike carrying pink microcline, a minor amount of white plagioclase, glassy white quartz, crumpled biotite and some allanite. The largest microcline crystal seen was 1 foot in diameter.
>
> The deposit was worked in 1910 by the Ojaipee Silica Feldspar Company. Production amounted to 1,500 tons of quartz and 100 tons of feldspar. The property has been idle since.

Concession IX, Lot 10. In February 1921, James Robinson discovered uraninite in a granite pegmatite on lot 10, concession IX, Conger township, near the lot line with lot 9. The property is three miles west of Highway 69. The pegmatite dike is exposed for a length of 70 feet along the slope of a north-facing hill about 40 feet high; the exposed width is 50 to 60 feet. The exposed surface is composed of white quartz and an intergrowth of smoky quartz, pink to red feldspar, biotite, and muscovite. Uraninite crystals from $\frac{1}{8}$ to $\frac{1}{4}$ inch in size frequently occur associated with mica. Ellsworth (1932, p. 175) also identified calciosamarskite and thucholite in the dike.

The dike was worked in 1922 by Robinson and McQuire for radioactive minerals.

Concession X, Lot 7. The following is from Satterly (1942, p. 57):

> A large pegmatite dike on lot 7, concession X, Conger township, half a mile west of the Canadian Pacific railway has been opened up by an open pit about 100 feet in diameter and 57 feet deep. The lower 20 feet of the pit is filled with water. As now exposed on the walls of the pit, and from material on the dump, the dike consists of pink microcline containing irregular glassy white quartz stringers and small books of muscovite. A little red garnet was found in some of the quartz. [Spence (1932, p. 55) states that the deposit carries a good grade of spar, but also contains zones of graphic granite.]
>
> The McQuire-Robinson Radium and By-Product Company, Limited, operated this deposit in 1923 and 1924 and in the early part of 1925, shipping in 1924 and 1925, 2,249 and 618 tons, respectively. P.W. and H.R. Checkley operated in 1924, shipping 1,372 tons. Work ceased on this property owing to the abundance of graphic granite.

Foley Township

Concession III, Lot 10. An 8-foot pegmatite dike in lot 10, concession III, Foley township, consisting of pink microcline, white plagioclase and considerable quartz was opened up for feldspar. The deposit is too small to be of economic interest.

McDougall Township

Concession X, Lot 2. This property was opened in 1926 by Mr. Bloom of Parry Sound. It is described by Spence (1932, p. 36, 37) as follows:

The main opening consists of an open cut 20 feet wide and 10 feet deep, carried benchwise into the face of a low ridge for a distance of 50 feet. The dike exposed here is 20 feet wide and consists of a good grade of pink spar cut by small quartz stringers. The principal impurities are dark mica and allanite, which are present in some quantity in medium-sized crystals.

A shallow stripping has been made a few hundred feet south of the main pit on a parallel dike of similar character and 12 feet wide, the opening being about 30 feet across.

At the other end of the lot, about ½ mile distant and near the main road, a third dike has been stripped for a distance of 75 feet. This dike is only 10 feet wide and carries principally white soda spar, with occasional crystals of pink spar scattered through it.

Concession XI, Lot 3. The following is taken from Satterly (1942, p. 59, 60):

Some development work was carried out on three pegmatite dikes outcropping on a ridge to the south of a swamp in lot 3, concession XI, McDougall township, about 5 miles from Waubamik on the Canadian National railway.

An 18-foot pegmatite dike cuts hornblende gneiss in a direction N.12°E. The dike consists of pink microcline, much of it graphic; irregular masses of glassy quartz in the centre of the dike; some pinkish-white plagioclase; and accessory allanite. Two openings have been made in the dike, the largest being an open cut at the north end, where the dike is 25 feet wide.

Two chains to the east, the second dike has been exposed by stripping and a small pit. The dike is 20 feet wide and consists of green and pink feldspars, quartz, biotite, and allanite . . .

Two chains east of the second dike, the third dike, which is 15 feet wide, has been stripped and trenched for 40 feet. The western two-thirds of this north and south dike is all graphic pink feldspar, and work was confined to the eastern third. Thirty feet south on the same dike another trench, 10 by 45 feet and 10 feet deep has been put down on the east third of the dike. The feldspar removed by these operations amounted to about 40 tons and was stock-piled about 5 years ago [1936], but no shipments were made. This material would probably not grade No. 1.

McKellar Township

Concession VI, Lot 4. The following is taken from Satterly (1942, p. 60):

The north half of lot 4, concession VI, McKellar township, was staked in 1937 and later patented by C. F. McQuire. A pegmatite dike was opened up by a trench, which trends N.50°—85°W. and is 220 feet long, 25 feet wide, and 10 to 20 feet deep. Much of the trench is now filled with water, there being a rock bridge 80 feet from the east end. The operators report that the dike was 12 feet wide, widening to 25 feet at the west end, but that at a depth of 20 feet it narrowed to 4 feet. The country rock is a grey biotite hybrid gneiss, with minor amounts of hornblende gneiss. Pink feldspar can be seen in masses as large as 3 by 5 feet . . . Glassy white quartz is abundant at the west end. There is practically no biotite and very few garnets. Some white plagioclase occurs 30 feet from the east end . . .

The deposit was worked during 1937 and 1938 but closed down at the end of 1938. About 600 tons of No. 1 grade potash feldspar was produced and sold to Bathurst Feldspar Mines Limited . . .

The occurrence is 12½ miles from Seguin Falls and 13 miles via Broadbent from Edgington station[1] [now Orrville] on the Canadian National railway.

Garnet

Garnet amphibolites and garnet paragneisses are common in the area. A garnet deposit on Parry Island was explored by Garnet Abrasives Corporation Limited.

[1] The railway station is not in use and the line has been dismantled.

Parry Sound–Huntsville area

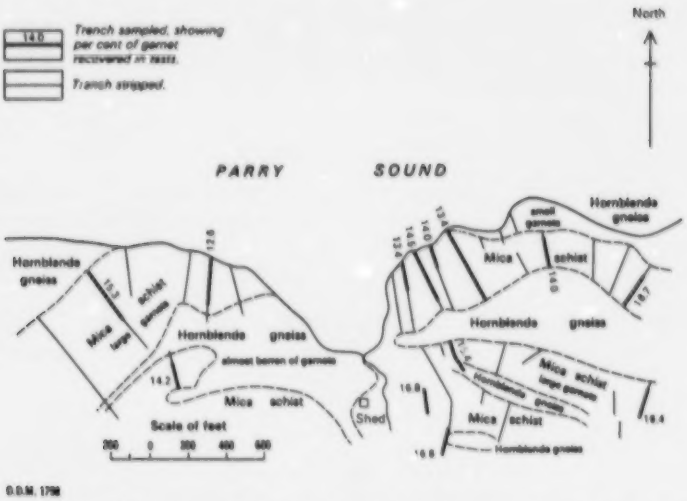


Figure 5—Plan of a portion of the garnet deposit, Parry Island, District of Parry Sound, Ontario (After Eardley-Wilmot 1927).

DISTRICT OF PARRY SOUND

Parry Island

The garnet deposit of Garnet Abrasives Corporation Limited is described as follows by Eardley-Wilmot (1927, p. 15-17):

Wide alternate bands of hornblende gneiss and mica schists, both containing garnets and striking east and west, occur on the north side of Parry Island near Depot Harbour.

The garnets in these bands are a pale red, and average about pea size. They occur in zones, but there are several rich bands, 6 to 10 feet wide, of large garnets 1 to 2 inches across. Near and along the shore, just to the west of Depot Harbour the garnets are small but evenly scattered making up about 12 to 15 percent of the rock.

The deeper coloured garnets occur in the mica schist which consists of both muscovite and biotite occurring in alternate thin streaks and in places exhibiting flow structure around the garnet crystals. The garnets in the hornblende gneiss are of a paler colour, and not so abundant, and are slightly smaller in size than those occurring in the mica schist.

The garnetiferous bands can be traced inland from the shore across the strike for about 200 yards within which there are a few narrow zones that are barren of garnets. Beyond these, occasional garnet outcrops occur, but the undergrowth is too thick to determine the true width. The zone can be traced for several miles along strike, and outcrops are exposed at various intervals within the island as well as on the mainland to the east.

Most of the work on the deposit was confined to prospecting and trenching. A complete mill test was made at the Bureau of Mines in 1921 and a flow-sheet for the garnet concentration was worked out.

Eardley-Wilmot (1927, p. 17) continues:

Although the garnet is slightly paler in colour than the best grade American, it possesses a good sharp fracture and good abrasive qualities. The deposit is very extensive, easily mined and the ore is comparatively easy to concentrate, moreover both rail and water transportation facilities can be had alongside of the ore body.

Trenching indicated widths of garnet gneiss over 100 feet wide grading up to 15 percent garnet.

Gold

DISTRICT OF MUSKOKA

Chaffey Township

Concession V, Lot 32. Grey biotite gneiss with bands of hornblende cut by pegmatite is exposed in a small pit on lot 32, concession V, Chaffey township, Muskoka district. A few splashes of pyrite occur on joint faces. Low gold values are reported by the owner. (Satterly 1942, p. 40)

Stephenson Township

Concession XIII, Lot 24. Grey biotite granite gneiss with a seam of biotite hornblende gneiss carrying a little pyrite outcrops near the Canadian National railway on lot 24, concession XIII, Stephenson township, Muskoka district. Low gold values are reported by the owner. (Satterly 1942, p. 40)

DISTRICT OF PARRY SOUND

Foley Township

Concession III, Lot 9. On lot 9, concession III, Foley township, a pit, 4 by 4 feet and 4 feet deep, has been put down in a hornblende gneiss cut by grey pegmatitic quartz stringers, a 2-inch stringer on the west side of the pit and a 2- to 6- inch stringer on the east side. The quartz carries a few grains of pyrrhotite and pyrite, and some pyrrhotite occurs in the gneiss next to the stringers. (Satterly 1942, p. 36)

McMurrich Township

Concession I, Lot 18. In lot 18, concession I, McMurrich township, a pit, 6 by 8 feet and 5 feet deep, in garnet hornblende gneiss containing lenses of white pegmatite shows a few grains of pyrite and pyrrhotite present in both rock types. Low gold values are reported. (Satterly 1942, p. 37)

Monteith Township

Concession VIII, Lot 15. Two pits have been sunk in lot 15, concession VIII, Monteith township. The southern pit, 10 by 10 feet and 6 feet deep, exposes biotite gneiss, garnet-biotite gneiss, and hornblende gneiss with pegmatite stringers. No mineralization was seen. The northern pit, 10 by 15 feet and 4 feet deep, shows some disseminated pyrite in a biotite-muscovite gneiss band in biotite gneiss. (Satterly 1942, p. 37)

Concession IX, Lot 17. A pit at the edge of the Seguin river in lot 17, concession IX, Monteith township, exposes biotite gneiss with disseminated pyrite. Low gold values are reported. (Satterly 1942, p. 37)

Concession X, Lot 11. In lot 11, concession X, Monteith township, the country rock is a complex of garnet-biotite gneiss, biotite gneiss, and pegmatite, with some hornblende gneiss. A pit 10 by 10 feet and 12 feet deep, has been sunk on a zone trending N.50°E. and dipping 60°S.E. in a biotite gneiss with pegmatite stringers carrying disseminated pyrite and, rarely, chalcopyrite. A grab sample of mineralized gneiss taken by the writer from the dump showed no gold on assay, although gold values are reported by the owner. Six chains to the northeast of this pit disseminated pyrite is found in a muscovite-biotite gneiss, which may be on the strike of the zone described above. (Satterly 1942, p. 38)

Concession XI, Lot 8. In lot 8, concession XI, Monteith township, a pit in hornblende gneiss with narrow bands of impure crystalline limestone shows some disseminated pyrite and pyrrhotite in the hornblende gneiss. A grab sample of this material taken by the writer was assayed for gold, but none was found. (Satterly 1942, p. 38)

Parry Sound–Huntsville area

Iron

DISTRICT OF PARRY SOUND

Foley Township

Concession VIII, Lot 29. The following is taken from Satterly (1942, p. 42, 43):

On lot 29, concession VIII, Foley township, magnetite occurs across a zone 4 feet wide in a pink granite gneiss containing some amphibolite and irregular masses of pink pegmatite. It is doubtful if the magnetite forms more than 50 percent of the rock across the 4-foot width, as samples on the dump contain hornblende and granite gneiss . . . A shaft, 5 by 5 feet and 17 feet deep, has been sunk on the magnetite zone, which trends approximately north and south and dips 80°E. This shaft is 5 chains east of the telegraph line. About 50 feet south of the shaft a shallow trench intersects the magnetite-pyrite zone, which is here 5 feet in width.

At 10½ chains north of the shaft and 1 chain east of the telegraph line, a pit, 5 by 5 by 10 feet, has been sunk on a coarse purple, pink, and greenish pegmatite containing a little magnetite as coarse aggregates and minute veins on the borders of the feldspar crystals. The country rock is a garnet amphibolite. The pit is near the boundary between concessions VIII and IX in lot 29.

This showing was drilled in 1903 by 9 holes aggregating 582 feet. It is stated that the drilling showed the iron deposit to be lenticular and without sufficient average width or continuity to warrant further mining.

McMurrich Township

Concession II, Lot 15. Earthy limonite and limonite concretions are present in sand adjacent to the road in lot 15, concession II, McMurrich township. The lens or bed may be one foot thick. Limonite gravel assayed 50.36 percent iron. Limonite concretions assayed 50.95 percent iron.

Mica

DISTRICT OF MUSKOKA

Chaffey Township

Concession X, Lot 13. A trench was put down on a muscovite-bearing pegmatite dike on lot 13, concession X, Chaffey township, District of Muskoka. The trench is ½ mile south of the road on the boundary between concession X and XI. The muscovite-bearing pegmatite dike is 3 to 4 feet wide and cuts pink biotite granite gneiss. Muscovite books average about 4 inches in size. Some mica is reported to have been shipped but the books are too small to be of economic interest.

DISTRICT OF PARRY SOUND

Ferguson Township

Concession I, Lot 11. The McNeil mica mine in lot 11, concession I, Ferguson township was being worked in 1895 (Slaght 1895, p. 280). Test openings are said to have indicated some excellent white mica.

Concession I, Lot 13. On the west side of the road to Lorimer lake [unnamed on Map 2118] on lot 13, concession I, Ferguson township, a small pit has been sunk on a white pegmatite dike, which is about 10 feet wide and cuts hornblende gneiss. Some muscovite is present. This occurrence does not appear to be anything more than a prospect pit put down in a search for mica. (Satterly 1942, p. 73)

McDougall Township

Concession XII, Lot 8. The following is from Satterly (1942, p. 73):

The old Oak Ridge mine was operated in 1894 by F. P. Leushner. Mr. Leushner, now living on Harris lake, kindly guided the writer to this old showing, which is near the north end of lot 8, concession XII, McDougall township, just northeast of a small lake and half a mile south of the Waubamik-McKellar road. An open cut, which is 40 feet long, 10 feet deep, and 6 feet wide, exposes a 6-foot dike of white and pink pegmatite with a glassy quartz centre 2½ feet wide. The dike trends N.35°E. and has a vertical to 75°N.W. dip. The dike breaks clean from the walls. The country rock is a black hornblende gneiss. It is stated that the mica occurred with feldspar at the margins of the dike and was 1 foot wide on the north wall. The largest book of muscovite recovered weighed 100 pounds. The small production was sold to Munsell and Company, New York.

Two other pegmatite dikes occur at 1 chain to the northwest and 3 chains to the southeast.

One book of muscovite, 4 inches in diameter, picked up from the old dump shows the mica to be badly stained or spotted.

Concession XII, Lot 12. There is an old pit, which is 15 by 20 feet and 15 feet deep and now filled with water, 19 chains south and 1 chain east of the corner post of the boundary line between lots 12 and 13, concession XII, McDougall township. Little can be seen except the waste rock on the old dump. The country rock is a hornblende gneiss. Most of the dump is a white and pink pegmatite containing muscovite and biotite. Some of the crumpled books of biotite are as much as 12 by 18 inches in dimensions. (Satterly 1942, p. 73)

Molybdenum

DISTRICT OF PARRY SOUND

Christie Township

Concession XII, Lot 9. The following is taken from Satterly (1942, p. 48):

A showing known locally as the Bloor mine is located in lot 9, concession XII, approximately half a mile north and northwest of the road corner at the boundary line between lots 8 and 9, concession XI, Christie township. There are three openings from south to north: (1) a trench 25 by 4 feet and 6 feet deep, now largely caved in; (2) a pit or shaft 10 by 10 feet filled with water; (3) a pit 10 by 16 feet, with water in the deeper west half of the pit.

The country rock is a dark-green hornblende gneiss containing irregular, lenticular bands of red garnet rock, such as seen in Lount township. The pits expose a coarse-grained (one-half inch) greenish crystalline limestone, containing bands of red garnet rock, and a hornblende-garnet-carbonate-quartz-feldspar rock. In the latter a few small clusters or flakes of molybdenite was found.

This occurrence is of no economic importance.

Radioactive Mineral Occurrences

DISTRICT OF PARRY SOUND

Carling Township

Quartz Island. In 1955, Fred Hoshoian of Hamilton staked a small island in Georgian Bay. It is southwest of Middle Island (unnamed on Map 2118, Lat. 45°22′N, Long. 80°19′W.), opposite lot 75, concession XII, Carling township, District of Parry Sound. The island is at the mouth of Snug Harbour. The showing was examined in July 1956 by J. Satterly and this description is taken from his unpublished report.

Parry Sound–Huntsville area

Quartz Island[1] (not shown on Map 2118) is about 200 feet in diameter and is composed mainly of massive black coarse-grained garnet-biotite amphibolite in contact on the west side of the island with 10 to 25 feet of hybrid granite gneiss striking N20°W and dipping steeply to vertical. Granite pegmatite dikelets cut the amphibolite.

The radioactive occurrence is a narrow pink coarse-grained muscovite granite pegmatite containing accessory iron carbonate and rare green apatite and ilmenite. Hematite staining was noted. The dike is 0 to 2 feet wide, with an exposed length of 40 feet. It strikes N25° to 60°W, and the dip changes from vertical to 45°SW. A sample of radioactive dike rock taken by J. Satterly assayed 0.06 percent U_3O_8 equivalent.

Wall Island. In September 1954 J. Satterly examined a radioactive mineral occurrence on the east side of Wall Island[1] (unnamed on Map 2118), Parry Sound district. Wall Island is just south of Huckleberry Island in Parry Sound. The following description is from J. Satterly's notes.

One showing is situated near the northeast corner of the island where an isolated small mass of coarse pink granite pegmatite about 20 by 50 feet in dimensions is exposed. The country rocks are fine-grained pink leucogranite gneiss and black biotite paragneiss. The contact of the pegmatite is exposed at only one place where it cuts biotite paragneiss. A grab sample taken by J. Satterly assayed 0.04 percent U_3O_8 equivalent.

The second showing is near the east shore of the island, about midway between the north and south shores. A coarse pink graphic leucogranite pegmatite is exposed for a length of 450 feet and a width of 30 to 40 feet. At its south end it is 100 feet from the shore. The dike strikes north-south. The country rocks are black medium-grained biotite paragneiss and pink fine-grained leucogranite gneiss dipping about 25°E. A series of shallow testpits have been excavated across the pegmatite about 150 feet south of its north end. The margins of the pegmatite contain biotite while the central part carries accessory pale-green muscovite. Yellow uranium stain was noted in the pegmatite near the west contact. Low values in U_3O_8 ranging from 0.003 to 0.07 percent U_3O_8 were obtained from grab samples. The true thickness of the pegmatite is difficult to determine.

McDougall Township

Concession A, Lot 12. In September 1954 Ascot Metals Corporation Limited acquired this property from Trio Uranium Mines Limited. The property was examined by J. Satterly in September 1954 and the following description is taken from his unpublished report.

The showings are in pegmatite exposures in a hay field just west of Highway 69, three miles north of the town of Parry Sound. Exploration consisted of six cross-trenches over a length of 300 feet on possibly two dikes. A third dike is present but has not been opened up. The country rock is biotite paragneiss, striking north and dipping 35° to 45° east.

[1]This is the local name and has not been approved by the Canadian Permanent Committee on Geographic Names.

The first dike has been explored by four cross trenches over a dike-length of 125 feet. The dike trends N70°E and ranges from 7 to 16 feet wide. It varies from a coarse pink biotite granite pegmatite to a medium-grained purplish red leucogranite pegmatite. Yellow uranium stain is found on fractures, around books of biotite and on the purplish-red pegmatite. Rusty patches are caused by the weathering of scattered grains of pyrite. Garnet is a minor accessory. A radioactive mineral occurs in minute shiny black grains altered in part to a yellow mineral.

What may be a second dike begins 100 feet west of the first. Two trenches, No. 5 and No. 6, have been put in this dike. It strikes about N65°E, has an exposed length of nearly 200 feet and ranges from 7 to 20 feet in width. It is a grey and pink coarse biotite granite pegmatite with rusty spots due to weathered pyrite. Blue apatite is a rare accessory in Trench 5. A radioactive mineral in minute black grains occurs in the quartz of the pegmatite in Trench 6.

A possible third dike lies 90 feet west of the second dike across a narrow strip of hay field. It is 400 feet long and 50 to 60 feet wide. The rock is a typical coarse pink graphic leucogranite pegmatite.

Concession A, Lot 15. In September 1954 Aacot Metals Corporation Limited acquired this property from Trio Uranium Mines Limited. The property was examined by J. Satterly in September 1954, and the following description is taken from his unpublished report.

A low ridge of fine to coarse pink graphic leucogranite pegmatite is exposed for a north-south length of at least 1,200 feet. Parts of the dike along-strike may be in lots 16 or 17. The pegmatite has been intruded as a sill in gently-dipping biotite gneiss. The dike possibly has a thickness of about 10 feet, but owing to the low dip wider widths are exposed at the surface. The pegmatite has been opened up by two trenches and a shallow pit. Allanite, uranothorite and uranophane were noted in the workings.

Georgian Bay Islands. Radioactive mineral occurrences were discovered in 1956 by T. W. Keating on islands 178c, 183c, and an unnumbered island west of 183c. (The island numbers are not shown on Map 2118.) These islands are west of Sandy Island, about 16 miles west of Parry Sound. The showings were examined by J. Satterly in October 1956 and the following description is taken from his unpublished report.

Three shallow testpits were put down on the islands. The country rocks are biotite paragneiss, amphibolite, and hybrid granite gneiss, cut by granite pegmatite. The regional strike is N25°E to N20°W and the dip is steeply east to vertical.

The pegmatite masses that contain scattered radioactive minerals are leucogranite or biotite granite pegmatite with pink feldspar crystals from less than 1 inch to 2 feet across. The radioactive minerals noted were uraninite, thucholite, allanite, and uranophane. Zircon and pyrite are accessory minerals. Low assay values from 0.007 to 0.12 percent U_3O_8 were obtained from grab samples.

Parry Sound–Huntsville area

Sand and Gravel

The eight descriptions that follow are taken from pages 118 to 121, inclusive, of "Sand and Gravel in Ontario" (I.M.R. No. 11) by D. F. Hewitt and P. F. Karrow.

DISTRICT OF MUSKOKA

Bracebridge

W. Finch and Sons. A sand and gravel pit operated by W. Finch and Sons is on the Purbrook road on the eastern outskirts of Bracebridge in the District of Muskoka. A 20-foot face exposes stratified sand (80 percent) and medium gravel (20 percent). Maximum size of gravel is 5 inches; 10 percent of the gravel exceeds 4 inches, and 40 percent exceeds 1 inch in size.

The pebbles are 100 percent Precambrian crystalline rocks. The pit is several hundred feet in length and has a 40-foot face at its west end.

A sieve analysis of a sand sample from the pit is given [in the accompanying table].

Mesh	... +4	−4 +8	−8 +14	−14 +28	−28 +48	−48 +100	−100 +200	−200
Weight percent	nil	1.0	8.3	16.9	41.3	31.1	1.1	0.3

Fowler Construction Company Ltd. The Nicholson pit, owned and operated by Fowler Construction Limited, is on lot 8, concession III, Macaulay township, District of Muskoka, a mile east of Bracebridge. A 12-foot face exposes stratified sand (70 percent) and medium gravel (30 percent). Maximum size of gravel is 6 inches; 20 percent exceeds 4 inches, and 50 percent exceeds 1 inch in size. The pebbles are wholly Precambrian crystalline rocks, mainly granite and gneiss.

A sieve analysis of sand from this pit is given [in the accompanying table].

Mesh	... +4	−4 +8	−8 +14	−14 +28	−28 +48	−48 +100	−100 +200	−200
Weight percent	0.3	0.8	1.4	2.4	25.5	66.5	2.9	0.2

The Ruttan pit, operated by Fowler Construction Limited, is on lots 11 and 12, concession VII, Macaulay township, District of Muskoka, on the north side of highway No. 118. An 18-foot face exposes poorly-stratified coarse sand (50 percent) and medium gravel (50 percent). The maximum size of gravel is 6 inches; 30 percent exceeds 4 inches, and 50 percent exceeds 1 inch. The gravel is wholly made up of Precambrian crystalline rocks, mainly granite and gneiss. A portable plant produces crusher-run gravel.

A sieve analysis of a sand sample from the pit face is given [in the accompanying table].

Mesh	... +4	−4 +8	−8 +14	−14 +28	−28 +48	−48 +100	−100 +200	−200
Weight percent	11.9	3.1	10.0	36.3	32.8	4.9	0.4	0.6

Milford Bay

Fowler Construction Company Ltd. The Blanchard pit, owned and operated by Fowler Construction, is ½ mile east of Milford Bay on lot 25, concession X, Monck township, District of Muskoka. A 30-foot face exposes stratified fine sand (70 percent) and medium gravel (30 percent). Maximum size of gravel is 10 inches; 20 percent exceeds 4 inches, and 50 percent exceeds 1 inch. The pebbles are 100 percent Precambrian crystalline rocks, mainly granites and gneisses.

A sieve analysis of sand from this pit is given [in the accompanying table].

This is an unusually fine sand.

Mesh	... +4	−4 +8	−8 +14	−14 +28	−28 +48	−48 +100	−100 +200	−200
Weight percent	0.4	nil	nil	nil	0.3	25.1	52.7	21.5

Torrance

R. Buckfleck. R. Buckfleck operates a small gravel pit ½ mile north of Torrance [not in map-area] in Wood township, District of Muskoka. A 20-foot face exposes stratified fine sand (70 percent) and medium gravel (30 percent). The maximum size of gravel observed is 10 inches; 30 percent exceeds 4 inches in size, and 60 percent exceeds 1 inch.

Huntsville

G. A. Wilkinson. The Wilkinson gravel pit is on the eastern outskirts of Huntsville on the Mary Lake road in the District of Muskoka. A 25-foot face exposes stratified sand (75 percent) and medium gravel (25 percent). The maximum size of gravel observed is 8 inches; 10 percent exceeds 4 inches in size, and 30 percent exceeds 1 inch. The pebbles are 100 percent Precambrian.

A sieve analysis of sand from the property is given [in the accompanying table].

Mesh	... +4	−4 +8	−8 +14	−14 +28	−28 +48	−48 +100	−100 +200	−200
Weight percent	6.8	7.6	2.2	6.4	32.4	47.8	1.7	0.1

DISTRICT OF PARRY SOUND

Parry Sound

Two gravel pits are operated on the east side of the highway No. 69 by-pass at Parry Sound, District of Parry Sound, just north of the Mill Lake Bridge.

Hall's Pit. The Hall pit, just north of the Mill Lake bridge, exposes 25 feet of stratified fine sand (80 percent) and medium gravel (20 percent). The maximum size of gravel observed is 10 inches; 10 percent exceeds 4 inches, and 30 percent exceeds 1 inch in size. The pebbles are 100 percent Precambrian crystalline rocks.

A sieve analysis of sand from the pit is given [in the accompanying table].

Mesh	... +4	−4 +8	−8 +14	−14 +28	−28 +48	−48 +100	−100 +200	−200
Weight percent	nil	0.3	0.9	5.0	27.4	40.3	12.9	4.0

Alfred Parton. The Parton pit, ½ mile north of the Hall pit, exposes 30 feet of stratified fine sand (80 percent) and medium to fine gravel (20 percent). The maximum size of gravel is 10 inches; 10 percent exceeds 4 inches, and 30 percent exceeds 1 inch in size.

Silt

DISTRICT OF MUSKOKA

Chaffey Township and Stisted Township

Concession X, Lots 19, 20. International Ceramic Mining Limited for several years operated a silt deposit at Melissa on the east side of Highway 11 in lot 19 and 20, concession X, Chaffey township. On this property is a bed of varved silt varying from 11 to 18 feet in thickness over an area of 8 to 9 acres. The silt bed is overlain by 3 to 12 feet of sand. Reserves of silt on this property were estimated by the company at 265,000 tons.

A second property known as the Hodge property is situated in lots 18 and 19, concession XI, Stisted township. Fifty-one auger holes were drilled on this property in an area of 13 acres. Average overburden was 1 to 4 feet and most holes stopped in silt at 20 to 25 feet depth.

Parry Sound–Huntsville area

The silt is a very uniform mineral flour composed of approximately 43 percent feldspar, 33 percent quartz, 14 percent hornblende and 10 percent biotite, garnet, magnetite, and other minor minerals. It is characterized by its extremely fine grain size with over 99 percent through 325-mesh. Typical chemical analyses of the silt is given in Table 20.

Table 20 | *Typical chemical analyses of silt deposits, Chaffey twp., con. X, lots 19, 20.*

	SAMPLE 1	SAMPLE 2		SAMPLE 1	SAMPLE 2
	percent	percent		percent	percent
SiO_2	64.60	65.47	MgO	1.80	1.90
Al_2O_3	16.06	16.01	K_2O	2.98	3.08
Fe_2O_3	2.20	5.01	Na_2O	3.32	3.70
FeO	2.61	...	Moisture	0.58	0.35
CaO	3.40	3.18	Loss on Ignition	0.97	1.30

The overburden is stripped by bulldozer. The silt is excavated by front-end loader and transported to a stockpile at the mill. The silt goes by conveyor to a dryer, then to an air classifier and thence to bins for bagging.

The silt was marketed under the name "Ceramispar" for use in ceramics. Owing to its high iron content it fired to a dark-brown colour. It was tested for use in sewer pipe glazes. It vitrified at 2,200°F. Under the name "Micro-fill" the silt was used as an inert carrier for fungicides and insecticides. Under the name "Cera-mix" the silt was used in the building trade as an admixture for portland cement, particularly in the manufacture of concrete blocks.

Stone

DISTRICT OF MUSKOKA

Huntsville

Two small quarries producing pink granitized paragneiss for building stone were in production in 1962 in Franklin and Sinclair townships on Highway 60, east of Huntsville, near Hillside.

Fred Boothby Quarry. The quarry operated by Fred Boothby is on the north side of Highway 60 about a mile east of Hillside on lot 18, concession XIV, Franklin township, District of Muskoka. The stone is a grey granitized paragneiss containing minor amounts of garnet. It is well-foliated and shows a mineral lineation on foliation surfaces. The gneiss strikes northeast and dips 10°NW. A 20-foot face on the south side of a low hill has been opened up. Blocks are removed by drilling and blasting, and the blocks are split by wedge and sledgehammer into thicknesses of 3, 6, and 9 inches. Veneer stone, dry-wall stone, and ashlar are produced. The stone does not split as readily as some of the other gneisses worked in Ontario.

J. Read Quarry. The quarry operated by J. Read of Sutton is ¼ mile northeast of Boothby's quarry on the same ridge of paragneiss. The quarry is 200 feet west of the barn on the Emberson farm, Sinclair township. The quarry face along the south face of the hill is 6 to 10 feet high and 60 feet long. Grey flat-lying biotite paragneiss cut by pink granitic stringers dips 10°NW. Vertical jointing strikes at N30°W and N50°E. Bedding seams are 8 to 24 inches apart and the stone is quarried in massive blocks which are split by wedge and sledgehammer. The stone is rather massive and does not readily split. Veneer, dry-wall stone, and ashlar are produced.

DISTRICT OF PARRY SOUND

McDougall Township

Gneiss is quarried at two sites in McDougall township near Parry Sound.

Mill Lake Quarry. The Mill Lake stone quarry operated by W. R. Hall is on the shore of Mill Lake, in lots 24 and 25, concession III, McDougall township, District of Parry Sound. The rock is flat-lying well-jointed grey to pinkish feldspathic biotite paragneiss. It is fine-grained and finely banded with good stratiform foliation and lineation. The quarry face is 35 feet in height and 250 feet long along the north side of a 60-foot hill. The upper few feet of black amphibolite gneiss is wasted. Six-foot holes are drilled using jackhammers. The resulting blocks are split with wedges and sledgehammers. Veneer, flagstone, and dry-wall stone are produced. Prices range from $8 to $14 per ton.

Parton Quarry. The Parton Quarry is on the shore of Georgian Bay on lots 16 and 17, concession A, McDougall township. The stone is flat-lying well-bedded granitized amphibolite gneiss.

Ferguson Township

Concession II, Lot 10. Two small pits were sunk in marble near Harris Lake on lot 10, concession II, Ferguson township. The marble strikes N35°E and dips 70°SE. It is medium-grained to coarse-grained crystalline limestone carrying some silicate minerals mainly serpentine and pyroxene. The marble band is in amphibolite country rock.

APPENDIX

Mineral Occurrences In
The Parry Sound-Huntsville Area

DISTRICT OF MUSKOKA

Brunel Township	
Con. VIII, lots 15, 16	Diatomite
Con. XIV, lot 16	Feldspar, mica
Chaffey Township	
Con. I, lot 8	Clay
Con. IV, lots 25, 26	Diatomite
Con. V, lot 32	Gold
Con. IX, lot 19	Diatomite
Con. X, lot 13	Mica, feldspar
Con. X, lot 18	Diatomite
Con. X, lots 19, 20	Diatomite
Con. X, lot 19	Silt
Draper Township	
Con. X, lots 3, 4	Diatomite
Con. XIII, lots 4, 5	Clay
Franklin Township	
Con. III, IV, lots 18, 19, 20	Stone
Con. XIV, lot 18	Stone
Macaulay Township	
Con. VI, lot 30	Diatomite
McLean Township	
Con. III, lot 32	Diatomite
Con. IV, lot 21	Diatomite
Con. V, lot 15	Diatomite
Con. V, lot 21	Diatomite
Con. VI, lot 14	Diatomite
Con. VII, lot 27	Diatomite
Medora Township	
Con. D, lot 11	Diatomite
Con. IV, lot 19	Diatomite
Oakley Township	
Con. XI, lot 30	Diatomite
Rideut Township	
Con. VIII, lots 28, 29	Diatomite
Sinclair Township	
Con. I, lot 16	Stone

Stephenson Township

Con. XIII, lot 24	Gold
Con. XIII, XIV, lot 25	Diatomite
Con. XIV, lot 24	Feldspar

Stisted Township

Con. I, II, lots 22, 23	Diatomite
Con. II, lot 25	Diatomite
Con. VIII, lots 7, 8, 9, 10	Diatomite, clay
Con. IX, lot 10	Diatomite, clay
Con. XI, lot 19	Diatomite

DISTRICT OF PARRY SOUND

Carling Township

Con. VII, lots 40, 41	Copper
Wall Island	Uranium
Island off Snug Harbour	Uranium

Christie Township

Con. VI, lot 27	Feldspar
Con. XII, lot 9	Molybdenum

Conger Township

Con. VIII, lot 5	Feldspar, uranium
Con. IX, lot 4	Feldspar, uranium
Con. IX, lot 10	Feldspar, uranium
Con. X, lot 7	Feldspar

Cowper Township

Con. IV, lot 15	Copper
Con. IV, lot 16	Copper
Con. IV, lot 17	Copper-zinc
Con. IV, lots 18, 19, 20, 21, 22	Copper, zinc
Con. IV, lot 23	Copper
Con. V, lot 9	Copper
Con. V, lot 13	Copper
Con. V, lot 14	Copper
Con. V, lot 20	Copper
Con. VI, lot 9	Copper

Ferguson Township

Con. I, lot 11	Mica
Con. I, lot 13	Mica
Con. II, lot 10	Stone
Con. II, lot 18	Mica

Foley Township

Con. II, lot 14	Copper
Con. III, lot 9	Gold
Con. III, lot 10	Copper, feldspar
Con. IV, lot 12	Copper
Con. IV, lot 13	Copper
Con. IV, lot 15	Copper
Con. V, lot 33	Copper
Con. VI, lot 23	Copper
Con. VI, lot 33	Copper
Con. VII, lot 25	Copper
Con. VII, lot 26	Copper
Con. VIII, lot 29	Iron

Parry Sound–Huntsville area

Con. IX, lot 15	Copper
Con. IX, lot 33	Copper
Con. X, lot 15	Copper
Con. X, lot 19	Copper
Con. XI, lot 13	Copper
Con. XI, lot 15	Copper
Con. XI, lot 16	Copper
Con. XI, lot 17	Copper
Con. XI, lot 27	Copper
Con. A, lot 137B	Copper
Con. A, lot 145	Copper
Con. B, lot 123	Copper
Con. B, lot 145	Copper
Con. B, lot 146	Copper

McDougall Township

Con. I, lot 18	Copper
Con. III, lots 24, 25	Stone
Con. X, lot 5	Feldspar
Con. X, lot 12	Mica
Con. XI, lot 3	Feldspar
Con. XII, lot 8	Mica
Con. XII, lot 12	Mica
Con. XII, lot 13	Copper-zinc
Con. A, lot 12	Uranium
Con. A, lot 15	Uranium
Con. A, lots 16, 17	Stone

McKellar Township

Con. VI, lot 4	Feldspar

McMurrich Township

Con. I, lot 18	Gold
Con. II, lot 15	Iron

Monteith Township

Con. VIII, lot 15	Gold
Con. IX, lot 17	Gold
Con. IX, lot 19	Copper
Con. X, lot 11	Gold
Con. XI, lot 8	Gold
Con. B, lot 21	Uranium
Parry Island (near Depot Harbour)	Garnet
Islands off Sandy Island	Uranium

Parry Township

Con. I, lot 3	Diatomite

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